

# Paper Towns

## Exploration of settlement planning in Early Historic to Early Medieval India w.r.t.

### Vāstuśāstra

Dissertation-cum-Thesis

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## Abstract

The most important takeaway from this research is that historicizing traditional Indian architectural literature also humanizes it. This can lead to a better understanding of the context of the texts and their milieu, thus both aiding academic investigations as well as deconstructing popular beliefs. The understanding is obtained that the earliest seminal texts on Vāstuśāstra (such as the Gṛhyasūtras, the Arthaśāstra and the Brihat Samhitā) were texts that depended less on the traditional exegesis of older authoritative literature and contributed descriptive observations of contemporary praxis. This could indicate that Vāstuśāstra was never meant to be set in stone; but was generated within a dynamic process of observation, description, and prescription of contemporary building traditions.

The original research question of the influence of contemporarily recognized Vāstuśāstra texts and traditions on historic Indian settlement planning is thus demonstrated to have been effective only if the settlements were planned after 1000 CE. The review of historic literature and archaeological research demonstrates that the cities and settlements popularly held to have been planned according to Vāstuśāstra such as Madurai, Jaipur etc. have no contemporaneous epigraphic or literary evidence supporting these claims. The research methodology and reviewed literature also demonstrates the invalidity of presenting selective correspondence of built features to textual norms as being reliable indicators of compliance with Vāstuśāstra. The historic settlement of Uttaramerur is shown to have epigraphic evidence for compliance only with Āgamic rules for temple locations and temple architecture, and not for compliance with the later Vāstuśāstra norms for settlement planning.

The conclusions formed are that the theory and praxis of architecture and planning in historic India were related but not demonstrably instructive. The history of the practice of Vāstuvidyā (more than 2000 years Before Present) is shown to be older and fundamentally different as compared to the literary tradition of Vāstuśāstra (about 1000 years BP). The increased correspondence of Vāstuśāstra literature and built evidence from 1000 CE onwards is offered as proof of its recent and descriptive origins through technically competent and historical authorship. The emergence of detailed prescriptions for settlement planning in the mature phase of Vāstuśāstra literature (post-1000 CE) is presented as signs for its later and descriptive origins. The methods of literary historicism and deconstructive meta-analysis is enjoined for future research on the Vāstuśāstra corpus.

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# 1. Introduction

## 1.1. Context

Vāstuśāstra is commonly understood to be the Indian traditional science of architecture, town planning and sculpture. A common definition for Vāstuśāstra is as defined by Acharya, the Indian scholar who revived the study of Vāstuśāstra literature in India in the 20<sup>th</sup> century (Acharya P. K., 1942):

*“Vāstu ... is defined as the place where men and gods reside. This includes the ground (dharā), buildings (harmya), conveyances (yāna), and couches (paryāṅka).”*

The general understanding in India of Vāstuśāstra being applicable to settlement planning and design, i.e. to the conception of cities, villages etc. is reflected by many authors, both popular and scholastic, both from the remote and the recent past, such as B B Dutt, P K Acharya, Vibhuti Sachdev etc. The assertion and confirmation of Vāstuśāstra-based planning for contemporary settlements for which documentation regarding other design principles exist, such as Chandigarh and Jaipur, in contemporary Indian literature demonstrates the popularity of this perspective. The research attempts to understand this perspective by an analysis of the history, historicity and internal ontological consistency of the extant Vāstuśāstra literature.

The literary tradition and contemporary of Vāstuśāstra has attracted research limited to scholars of Sanskrit literature, conservationists of early historic Indian religious architecture, and Hindu nationalist-revivalist scholars, despite its popular position as the ancient Indian science of architecture. This can be attributed to various factors, including the lack of historicism in primary literature, the lack of correspondence of historical built structures to textual prescriptions, and the lack of epigraphic or historical records validating compliance with the Vāstuśāstra traditions.

## 1.2. Aim

The aim of this research is to historicise the literature pertaining to Vāstuśāstra to understand the epistemological and ontological frameworks of settlement planning and design in India for the historical period between 300BCE – 1200 CE.

## 1.3. Objectives

The objectives of the research are:

1. To explore the epistemological bases for settlement planning and design in Vāstuśāstra literature
2. To explore the ontological frameworks for settlement planning and design in Vāstuśāstra literature
3. To historicise the development of Vāstuśāstra literature on early historic Indian settlement planning and design

## 1.4. Need for Research

### 1.4.1. Ahistorical Rationalisation

Some modern literature on Vāstuśāstra seeks to rationalize the tradition through contemporary empirical frameworks such as the bio-climatic sensitivity of historic building traditions, the sustainability aspects of the principles enjoined in these texts etc.(some such analyses are discussed in the review of literature). These analyses are generated in modern architectural traditions that depend on very different building technologies and material economies which could render these ahistorical analyses of early historic Indian literature to not be of critical value. The ahistorical rationalization of Vāstuśāstra can contribute to misinformation and misattribution of concepts and technologies that were not a part of the building traditions and social paradigms of the period that the texts were composed in.

### 1.4.2. Optimal Rationalisation

The position taken in this research is that the optimal justification or rationalization of the norms for architecture and planning as prescribed in the Vāstuśāstra texts is by the level of contemporaneous technical validity and compliance; which requires historicized reviews of the texts and their contexts. The position is further strengthened by the comparative dearth of research which concerns itself with the philological, historical and sociological analyses of Vāstuśāstra and its applications. Significant streams of popular and established literature concerns itself with further elucidation of the norms presented in various texts, enhanced critical annotation of both newly discovered and older texts, comparative reviews and overviews of the literary tradition etc. Yet, contrastingly, studies based on archaeology or ethnography almost disregards the need for understanding and analysing the literary traditions of Vāstuśāstra as an aid to historic research. These contradictions may have both prompted and fueled the longstanding debate on whether Vāstuśāstra was primarily prescriptive or descriptive.

### 1.4.3. Epistemological Conflicts

The source of these conflicts is in the epistemological position taken by the Indian Śāstric tradition itself, which does not allow for historicism and meta-criticism, due to the self-attested claims of Śāstric literature (including most of the other post-Vedic religious literature) to being divinely revealed timeless knowledge. This may explain why traditional Indian scholars attempt ahistoricalal exegesis and refrain from critical meta-commentary despite their possibly greater familiarity with the subject matter.

### 1.4.4. Possible Research Outputs

Thus, establishing the historicism of Vāstuśāstra can potentially aid in establishing empirical frameworks for determining correspondence/compliance of early historic building traditions through rigorous and replicable verifiable methods. The results of such frameworks would enable future researchers to avoid the current unempirical means of determining the validity of Vāstuśāstra prescriptions.

The learnings thus obtained can also be useful in informing contemporary practice and knowledge of Vāstuśāstra in India and abroad; and provide the researchers on this literary tradition with empirical and historical bases for further exploration.

## 1.5. Scope

The scope of the research is limited to literature published on the built heritage and building traditions belonging mostly to the time period from 300 BCE to 1200 CE, mostly within the Indian subcontinent; with the analysis oriented towards generating an understanding about Vāstuśāstra literature relevant to early historic Indian planning and building traditions.

The time period is chosen thus to bookend the estimated dates of compilation for:

- a) the earliest known extant verifiably datable text which mentions both the design and planning of settlements and the art/science of Vāstuvidyā (the Arthaśāstra – dated by scholars to 300 BCE-300 CE (Olivelle, 2013; Kangle, 1963)) and
- b) the most influential texts of the Vāstuśāstra tradition such as the Samarāṅgaṇa Sūtradhāra, Mānasāra and Mayamata (all of which are estimated to have attained their most definitive recensions in the 1000 CE-1200 CE time period).

Supplementary literature belonging to the disciplines of the humanities (such as history, epigraphy, archaeology, sociology etc.) is also referred to provide extrinsic and empirical validation of the domain and its contents.

## 1.6. Limitations

The key takeaways of the research are both influenced and constrained by the understandings about the epistemology and ontology of Vāstuśāstra texts (i.e., the epistemological claims of Vāstuśāstra texts to being timeless knowledge revealed by divinely sources – which does not allow for historicism and meta-criticism; and the ontological components of Vāstuśāstra paradigms being demonstrably borrowed from non-architectural and primarily ritualistic precedent literature – which could render the historical and technical criticism of these components to be ill-suited).

## 1.7. Primary Literature

This research depends on published standard translations, the most cited reference works, peer-reviewed literature etc. for ensuring the reliability of the positions taken with respect to the investigation and interpretation of primary literature, especially for religious texts, which are often composed in archaic scripts and terms.

## 1.8. Material Evidence

This research refers to published and peer-reviewed literature to ensure the reliability of the positions taken with respect to the investigation and interpretation of historic material evidences.

## 1.9. Epistemology of Domain Literature

The epistemological framework of both Vāstuśāstra texts, as well as the tradition of Indian Śāstras in general, do not support historicism and meta-criticism due to their claims to being timeless knowledge revealed by divine means. Technical commentaries on empirically verifiable building practices by historical authors arise across India towards the end of the early medieval period. Thus, despite the profusion of modern literature on historic cities and urbanism in India upto the end of the early medieval period (after 1200 CE), the position of primary materials for the research is reserved for texts that directly pertain to Vāstuvidyā and/or Vāstuśāstra, with supplementary evidence taken from other relevant or contemporaneous literature.

## 1.10. Methodology

### 1.10.1. Overview of Methods and Domains

The approach followed by authors towards formulating an understanding of the position on Vāstuśāstra appears to be dependent on the domain(s) used as the medium of investigation. The domains, methods of investigation, and chronological constraints of the various authors are broadly described in the table below:

*Table 1-1: Overview of domains, methods of investigation, and constraints of approaches used for studying Vastusastra*

Domains	Methods of investigation	Constraints
Literature, Philology	Exegesis, Source criticism, Literary criticism, Interpretative history, Textual deconstruction	'Sastric' epistemology, Historicity of literature, Objective empiricism of interpretation
History	Exegesis, Source criticism, Literary criticism, Interpretative history, Metahistory, Metanarrative	Historicity of literature, Objective empiricism of interpretation, Archaeological rigour, Scientific validation
Other Humanities	Ethnography, Sociology, Interpretative anthropology, Archaeology	Quantitative historical resources, Objective empiricism of interpretation

Note: The table above provides a broad overview of epistemological positions as understood from a review of literature; and may not objectively or consistently represent all possible positions and their nuances.

The methods of investigation and the constraints associated with each domain discussed above are intrinsic to the results they deliver; the significance of which is elaborated upon in the analysis of the epistemology and ontology of Vāstuśāstra.

### 1.10.2. Review of Methods of Selected Authors

The methods used by different authors appears to have influenced the nature of their conclusions as well. The nationalist tendency of pre-independence Indian authorship and the orientalist tendency of pre-independence colonial scholarship was discussed in the review of literature earlier. Thus the goals of the authors have to be considered both independently and inclusively while assessing the relations between the approach they follow for their investigation of Vāstuśāstra as well as the epistemological conclusions they assert for the same. The primary methods of selected authors are briefly listed below:

Table 1-2: Overview of primary methods of selected authors on Vāstuśāstra

Conclusion Approach	Prescriptive Science	Descriptive Theory	Theory of architecture
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Literature/ Philology	Prasanna Kumar Acharya, Venkatarama Ayyar, Subhash Kak, Dwijendra Nath Shukla, Tarapada Bhattacharya, Bruno Dagens	Prasanna Kumar Acharya, Bruno Dagens, Felix Otter, Libbie Mills, Anna Libera Dallapicolla	Prasanna Kumar Acharya, Ramya Palani, Libbie Mills
History/ Ethnography/ Sociology		George Erdosy, Amalanda Ghosh, Sonit Bafna, Michael W Meister, Dieter Schlingloff, Alice Boner, Adam Hardy	Dieter Schlingloff, Ramya Palani
Archaeology		Madhuri Desai, Vijaya Ramaswamy	Madhuri Desai, Vijaya Ramaswamy
Combined Methods / Commentary /	Binode Behari Dutt, Giles Tillotson, Ernest Binfield Havell, Subhash Kak	Giles Tillotson, Sonit Bafna, A Srivathsan, Libbie Mills, T S Maxwell	Vibhuti Sachdev, A Srivathsan, Libbie Mills

Note: Many of the authors do not explicitly detail their positions and may have a more nuanced opinion on the Vāstuśāstra; yet, for the purposes of this research, the most appropriate positions and approaches of these authors (as understood by the author) have been indicated.

### 1.10.3. Methods Used In This Research

The meta-investigation of the relevance of Vāstuśāstra traditions to the domains of settlement planning in historical India is attempted in this research through an analysis of both the historical and ontological development of settlement planning and design in the extant technical Indian literature pertaining to Vāstuśāstra traditions.

The research method involves deconstructive analysis of the ontological components of Vāstuśāstra paradigms such as the Vāstupuruṣamandalā, the template-plans for settlements as described in Vāstuśāstra texts etc. through historical methods of text analysis and validation of the assertions therein through material domains such as archaeology, epigraphy etc.

#### 1.10.3.1. Source Criticism as a Historical Method

Historical method is the collection of techniques and guidelines that historians use to research and write histories of the past. Secondary sources, primary sources and material evidence such as that derived from archaeology may all be drawn on, and the historian's skill lies in identifying these sources, evaluating their relative authority, and combining their testimony appropriately in order to construct an accurate and reliable picture of past events and environments. Source criticism (or information evaluation) is

the process of evaluating the qualities of an information source, such as its validity, reliability, and relevance to the subject under investigation; for which six enquiries are proposed (Garrahan & Delanglez, 1946):

- 1) When was the source, written or unwritten, produced (date)?
- 2) Where was it produced (localization)?
- 3) By whom was it produced (authorship)?
- 4) From what pre-existing material was it produced (analysis)?
- 5) In what original form was it produced (integrity)?
- 6) What is the evidential value of its contents (credibility)?

The first four are known as higher criticism; the fifth, lower criticism; and, together, external criticism. The sixth and final inquiry about a source is called internal criticism. Together, this inquiry is known as source criticism.

#### **1.10.3.2. Validity of Chosen Methods for research on Early Historic Indian Literature**

The historicizing of the literary traditions of Indian Śāstras as a means to establish a historic contextual picture of the praxis and the recognized practices of a particular historic period has been attempted for Vāstuśāstra by Otter (Otter, 2009) (Otter, 2016), Desai (Desai, 2012), and in the past, by Bhattacharya (Bhattacharya T. , 1947). The results derived by their approach has been revolutionary, some of them even overturning the current perceptions of Vāstuśāstra (Otter, 2016), (Desai, 2012), (Bhattacharya T. , 1947):

1. Geomantic-divinatory origins of Vāstu-based practices
2. Dependence of Vāstu texts on older non-architectural texts for frameworks
3. The absence of the practice of measured drawings in older Vāstu literature
4. Recent origins of and modern elements in post-1800 CE Vāstuśāstra portrayals
5. Late origins of mature Vāstuśāstra literature

Some of these findings depend on research on a larger body of contemporaneous literature (such as the Hindu and Buddhist texts known as Tantras and Agamas) which prescribed many of the norms currently practiced in Vāstuśāstra from sectarian cult-ritual frameworks (not related to architectural or spatial logics). The research work by Sanderson on post-Vedic Śaiva praxis and literature (Sanderson, 2009), the continuing research by Apte on early Vaiṣṇava Pāñcarātra-āgama literature (Apte P. P., 1991), the efforts of Mills to trace the effects of these texts on the texts and practices which followed (Mills, 2019); are examples of the rigorous use of historical methods in analyses of historic Indian religious praxis and literature.

The continuing research by Adam Hardy and Michael Meister on the historical built traditions of Indian temple architecture through the study and analyses of temples and other Hindu religious structures throughout Southeast Asia (primarily India) is another application of the historical method (which is based on verifiable material evidence) as opposed to interpretation of recensions of domain literature. These explorations on the built evidence fronts are supported by the ethnographic research of Parker (Parker, 2003) and the epigraphic analyses of Ramaswamy (Ramaswamy, 2004), Hall (Hall, 1980), Karashima (Karashima, 1984) etc., among others.

These methods have demonstrated results outside the Vāstuśāstra genre as well but within the same Śāstric traditions - an example is the review of the origins of yoga as a physical discipline by Singleton (Singleton, 2010), the discussion on which was further elaborated with translations of key texts and the investigation of many yogic practices hitherto taken to be original (Mallinson & Singleton, 2017).

The current lack of Vāstuśāstra research based in philology, archaeology etc. has resulted in an acritical and ahistorical acceptance of the antiquity and enforcement of the knowledge and norms of Vāstuśāstra (Otter, 2016) (Desai, 2012). This research attempts to demonstrate the importance of historicism and meta-criticism in validating studies on Indian culture; whilst using these methods to provide new or obscure understandings of Vāstuśāstra literature (especially with respect to settlement planning and design).

## 2. Literature Review

The literature referred to includes research on key and seminal Vāstuśāstra texts such as the Samarāṅgaṇa Sūtradhāra, the Mayamata etc., along with research on texts pertaining to the development of early Vāstuśāstra such as the post-Vedic Kalpasūtras, the Arthaśāstra, the Brihat Samhita etc. The new developments in this dissertation is the inclusion of recently published historical research on prescriptive texts on architecture hitherto not included in the historical overviews of Vāstuśāstra such as the Pauśkara Samhita, the Hayaśīrṣa Pāñcarātra, the Śaivasiddhāntika Pratiṣṭhātantras etc. Literature on the historical development of:- urbanism in historic India, religious sects in historic India, archaeological discoveries on historic Indian settlements etc. is referred to for further validation.

### 2.1. Vāstuśāstra Literature

The scholarly consensus on early technical literature on architecture and planning in India considers that the earliest compositions which served as references to the extant treatises are no longer available or not found as yet (Bhattacharya T. , 2006). Some authors refer to ‘floating traditions’ of architecture in these periods (Acharya P. K., 1933), or posit the existence of a lost/unidentified ur-text on architecture which contributed to the similar content of the norms and descriptions found in the pre-800 CE texts such as the Matsya Purāna, the Hayaśīrṣa Pāñcarātra etc. (Bhattacharya T. , 2006).

The seminal compendium Arthashāstra is dated much earlier (300 BCE – 300 CE) than the texts mentioned above (Olivelle, 2013); yet it is not composed specifically on town planning and urban design, and does not contain many of the principles or concepts that are considered characteristic of Vāstuśāstra as it is known today (Bhattacharya T. , 2006).

The Indian Sanskrit classical texts on architecture are not supplemented by a multitude of commentaries, regional recensions, local copies of manuscripts etc.; as are found for other Sanskrit literary traditions such as poetry, drama etc. (Otter, 2011). These technical treatises dealt primarily with architecture and described the axioms and rules for town planning and urban design as components of the same ontological framework. The texts considered to be the most mature and comprehensive by the researchers and scholars of Vāstuśāstra, especially with regard to town planning and urban design are listed below (Acharya P. K., 1933) (Shastri & Gadre, 1990) (Ambatkar, 1999) (Bhattacharya T. , 2006):

- Samarāṅgaṇa Sūtradhāra (1000 – 1055 CE; reign of Rāja Bhoja)
- Mayamata (Post 1000 CE: debated)
- Mānasāra (Post 1000 CE: debated)

Of these, the first is generally accepted as belonging to the Northern Indian school of architecture (Nāgara) originated by Vishvakarma, with the text itself being attributed to Bhoja Raja (between 1000 – 1055 AD) (Dhaky, 1996). The last two texts are taken to belong to the Southern school of architecture (Drāvida) started by Maya or Mayamuni; with no historical authorship attributed to both these texts (Bhattacharya T. , 2006, p. 187) (Shastri & Gadre, 1990). The texts are considered by scholars to be the results of accretion of knowledge over time, with many of the influential texts undergoing constant refinement, thus rendering the task of dating them to a specific period prone to debate (Acharya P. K., 1933; Bhattacharya T. , Vastuvidya Systems of Indian Architecture, 2006). An example is the position asserted for the Mānasāra by Acharya, as one of the earliest texts on architecture and town planning, to having been compiled around the time of Vitruvius’ texts on architecture – around 25 BCE; which is contested by other scholars such as Bhattacharya as being too early (Acharya P. K., 1933, p. lix) (Bhattacharya T. , 2006, p. 192). A later date of post-1000 CE is often proposed for the Manasara; based on the completeness of its descriptions and classifications, the extent of the topics it covers etc. (Bhattacharya T. , 2006; Hardy, Drāvida Temples in the Samarāṅgaṇasūtradhāra, 2009). This uncertainty extends to other seminal texts such as the Brihat Samhita (estimated to around 550 AD) (Iyer, 1884) and the Mayamatam (estimated to the end of the 10<sup>th</sup> century AD) (Hardy, Drāvida Temples in the Samarāṅgaṇasūtradhāra, 2009) as well.

#### 2.1.1. Two Major Schools of Historic Indian Architecture

The thesis of two schools of early Indian architecture – Nāgara (Northern) and Dravida (Southern) have been explored by authors such as Dutt (Dutt, 1925, p. 149) and Bhattacharya (Bhattacharya, 2006) etc. at length with substantial textual support and arguments generated for their distinct yet interdependent development. These texts are also not technical, i.e., they are not compiled solely as texts on architecture or town planning. They award the palace of the ruler the central position in a settlement and orient the other allocations with regard to the palace complex; as compared to the elaboration of ward placements and allocations in the South Indian treatises on town planning being derived from the frameworks derived from the Vāstupuruṣamandalas (Dutt B. B., 1925).

Acharya, in his work from 1946, provides a list of the following 83 works which contain chapters/details on Vāstuśāstra (Acharya P. K., 1946):

*Table 2-1: List of 83 Vāstuśāstra texts identified by Dr. P K Acharya by 1946*

Texts (1-45)	Texts (46-64)	Texts (65-83)
1. Mānasāra	46. Dhruvadi shodasa gehani	65. Vastu purusha lakshana
2. Brhat samhita	47. Nava sastra	66. Vastu prakasa
3. Mayamata	48. Agni Purana	67. Vastu pradipa
4. Anka sastra	49. Matsya Purana	68. Vastu manjari
5. Aparajita Vāstu Śastra	50. Maya samgraha	69. Vastu mandana
6. to 33. Maha-agamas (28 books)	51. Prasada kirtana	70. Vastu lakshana
34. Ayadi Lakshana	52. Prasada Lakshana	71. Vastu vichara
35. Aramadi Pratishttha Paddhati	53. Tachchu sastra	72. Vastu Vidya
36. Kasyapiya	54. Manushyalaya Lakshana	73. Vastu vidhi
37. Kupadi Jala Sthana Lakshana	55. Manushyalaya Chandrika	74. Vastu samgraha
38. Kshetra Nirmana Vidhi	56. Mantra dipika	75. Vastu sarvasva
39. Gargya samhita	57. Mana kathana	76. Vimana lakshana
40. Griha Pithika	58. Manava vastu lakshana	77. Visvakarma prakasa
41. Ghattotsarga Suchanika	59. Manasollasa	78. Vaikhanasa
42. Chakra sastra	60. Raja griha nirmana	79. Sastra jaladhi ratna
43. Jnana ratna kosha	61. Rupa mandana	80. Silpa prakasa
44. Vastu sarani	62. Vastu chakra	81. Silpakala Dipika
45. Devalaya Lakshana	63. Vastu tattva	82. Silpartha Śastra
46. Sanatkumara Vāstu Śastra	64. Vastu nirmaya	83. Samarangana Sutradhara

Many of these are later texts with regional origins; with the three texts mentioned before – Mānasāra, Mayamata and Samarāṅgaṇa Sūtradhāra, being considered the most relevant early examples in literature for the tradition of the Vāstuśāstra.

## 2.1.2. Key Vāstuśāstra Texts up to Early Medieval Period

The following 11 texts/compilations were analysed to understand the development of Vāstuśāstra literature, with the following conditions:

1. Pre-1000 CE scholarly consensus date for the extant compilation
2. Earliest known texts containing paradigms specific to later Indian Vāstuśāstra literature
3. Published peer-reviewed research and analysis for the texts, their contents and historical context being accessible for this study

*Table 2-2: Key Vāstuśāstra texts referred to during research*

Text	Original / Attributed Historical Author(s)	Period of Extant Recension	Author Primarily Referred To	Year of Publication
Kalpa-Sutras	Āśvalāyana, Gobhila etc.	Pre 500 BCE	Hermann Oldenberg.; Gopal Ram	1886
Arthasāstra	Kautilyā/Chāṇakya	200 BCE – 300 CE	R P Kangle	1960
Pauśkara Samhitā	Unknown	300 CE – 500 CE	P P Apte	1991
Brihat Samhitā	Varāhamihira	~ 550 CE	N Chidambara Iyer	1885
Matsya Purāna	Unknown	~ 500 CE – unknown	Taluqdar of Oudh	1917
Agni Purāna	Unknown	~ 700 CE – unknown	J. L. Shastri, G. P. Bhatt, N. Gangadharan	1954
Piṅgalāmata	Unknown	450 CE – 1000 CE	Libbie Mills	2011
Hayaśrīṣa Pāñcarātra	Unknown	~800 CE onwards	Elisabeth Raddock	2011
Samarāṅgaṇa Sūtradhāra	Raja Bhojadeva	1050 CE	D N Shukla	1998
Mayamata / Mayasamgraha	Unknown	Post 1000 CE	Bruno Dagens	1994
Mānasāra	Māna (Agastya)	Post 1000 CE	P K Acharya	1933

## Modern Scholarship on Vāstuśāstra



### 2.1.3. Modern Scholarship on Vāstuśāstra

#### 2.1.3.1. Review of Seminal Modern Literature

##### 2.1.3.1.1. The First Contemporary Text

The first few works of literature that were referred to in the course of this research were some of the most cited and popular works on historic Indian urban planning and design. The study of Indian architectural history through the compilation, translation and critical analysis of pre-1800 CE Sanskrit technical literature was begun by Ram Raz (Raz, 1834), an Indian civil servant employed by the Madras Civil Service offices to document and explicate historic Indian architecture (Desai, 2012). His posthumously published monograph *Essay on the Architecture of The Hindoos* was provided with a host of illustrations that supported the textual exegesis, probably influenced by European editions of architectural treatises (Desai, 2012). The work was based mainly on the Mānasāra but also consulted other texts such as the Mayamata, Kāśyapa, Vaikhānasāgama, Sakalādhikāra, Viswakārmīyam, Sanatkumāra, Sāraswatīyam, Pāñcarātrāgama etc. (Raz, 1834). The influence of this seminal text on all the subsequent literature on the study and analysis of historic Indian architecture and planning, especially research mediated through a critical analysis of traditional Indian literature rather than field-based findings, has been stressed by Desai (Desai, 2012) and Otter (Otter, 2009) among others. Some methodologies of research and analysis as established by Raz continue to become visible in later literature as well (Desai, 2012) (Otter, 2009) (Hardy, Drāvida Temples in the Samarānganasūtradhāra, 2009) (Ravindran & Hardy, 2020), such as:

1. The definition of styles of architecture on religious bases, such as, the association of *Hindoo* architecture with pre-1200 CE trabeated structures and the association of *Islamic* architecture with post-1200 CE arcuated structures
2. The dependence on texts redacted much later in South India to explicate temple development across all periods all over India
3. The frequent ahistorical and achronological claims to the antiquity of Indian built structures to accommodate the conception of a timeless Hindu architectural past, despite their documented development across wide spans of time
4. The use of illustrations and standardized categories, as known in contemporary Western treatises on classical architecture, to formalize the varying prescriptions and classifications found in traditional Indian architectural literature; despite the Indian source manuscripts not containing any explicative

illustrations, chapters and sections, definite vocabulary and terms, references to historic built structures etc.

5. The provision of illustrations drawn by contemporary architects and draftsmen to attempt to explain the prescriptions found in the manuscripts, created by conflation and combination of different styles of Indian architecture from different periods (including Islamic and Indo-Saracenic examples); as opposed to analysis of historic built examples
6. Assertions of the validity of these norms via partial or interpreted correspondence of historic buildings and settlements with selected prescriptions; combined with disregard or non-engagement with historic examples from the same period and region, which do not follow or even contradict the selected prescriptions
7. The dependence on contemporary artisans and sculptors to relate the archaic, vague and often-fluidly used Sanskrit terms to their contemporary English equivalents, as opposed to traditional Sanskrit academics; despite an implicit disregard for practice and regard for theory in the process of historicizing historic Indian literature
8. The explicit overarching goal of revival of an ancient Hindu nationalist identity through the resuscitating of traditional cultural and architectural practices as interpreted through primarily Hindu traditional literature

The earliest Indian authors also attempted to ascribe high antiquity to the texts by demonstrating their similarity to the ten texts on architecture attributed to the Roman architect, engineer and theorist Vitruvius, ascribed a period of composition around 25-27 BCE (Desai, 2012) (Otter, 2009). The trend in Indian authorship for contemporary Vāstu literature was thus oriented towards the conception that these treatises were compilations of precise instructions as opposed to summaries of practices and nomenclature for classifying typologies and ornamentation (Desai, 2012, p. 464).

##### 2.1.3.1.2. Post-1800 CE Seminal Works

Raz's scholarly work was succeeded by colonial researchers such as Fergusson (Fergusson, 1876) and Havell (Havell, 1915), neither of whom were trained as architects or as historians; and whose research methodology was less dependent on literature and more on fieldwork, probably due to their lack of familiarity with Sanskrit. Yet, the colonial perspective on the validity of historic Indian literature is presented by Fergusson's views can be understood from the statement below (Fergusson, 1876):

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*"In such a country as India, the chisels of her sculptors are, so far as I can judge, immeasurably more to be trusted than the pens of her authors."*

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They were preceded in this method by the artist William Hodges whose survey of the social and physical landscape of India while in the services of the East India Company were later published as descriptions, illustrations and opinions on the architectural efforts of both contemporary and historic India (Hodges, 1794). The colonial precedents continued many administration-based classifications of architecture into religious categories despite noting their chronological and historical differences. These studies were often turned into pattern books or guidelines for informing colonial architects on the modes to 'Indianise' their administrative buildings or memorial architecture (Chakrabarti, 1999).

#### 2.1.3.1.3. Critical Revival of Vāstu Literature Post-1900 CE

Acharya's seminal work on Indian Vāstu literature is credited with the revival of serious critical examinations of traditional Indian Vāstu literature in the post-1900 CE era, which often followed Acharya's research-writing methodology as well (Otter, 2009). Some contemporary works include Bose's survey of Orissan architecture primarily dependent on the Orissan Vastu text *Bhubanapradipa* (Bose N. K., 1932), which was preceded by Mitra's survey of Orissan architectural antiquities (Mitra, 1875-80(1961-63)). Acharya's 7-volume series (based primarily on the Manasara with references and learnings from many other related Vāstuśāstra texts) published from 1927-1946, with research work beginning in 1914 (Desai, 2012, p. 465), and provided scholars of Vāstuśāstra with the first critical English edition of the Manasara alongwith a dictionary and encyclopedia for Indian historic architecture among other contributions. The increasing interest in the mysticism and timelessness of Indian architecture, especially as understood through traditional literature, was elaborated upon by Kramrisch (Kramrisch, 1946) and Volwahren (Volwahren, 1969); both of whom added further elaboration via photography and mixed media approaches of graphic overlays and measured drawings to supplement the concepts and remarks discussed therein.

#### 2.1.3.1.4. Post-1900 CE Seminal Works

Dutt's monograph on ancient and historic Indian settlement planning (Dutt B. B., 1925) was a wide-sweeping work primarily dependent on scriptural literature and Vāstu texts, with some historic examples and assertions of correspondence. This text was one of the earliest and often most-cited texts on this particular domain; but does not provide rigorous citations and a defensible rationale for the methodology used to verify the

applications of the norms specified by Vāstu literature. Ayyar's earlier work on the same subject (Ayyar, 1913), which was limited to an investigation of historic South Indian literature on the planning of settlements was considered by Dutt to be an inspiration which was limited in scope and sources. Both works contain achronological assertions between built structures and the literature which apparently specifies the norms for the same; an example of which is the correspondence alleged between pre-800 CE structures and settlements being attributed to the norms of the Mānasāra and Mayamata - both of which are now agreed upon by scholars to be post-800 CE compositions (Bhattacharya, 2006) (Bhattacharya, 1947), as compared to the earlier assertions of being composed around 500 CE (Acharya P. K., 1934).

The inclusion of Buddhist literature and antiquities in the review of historic Indian urbanism was championed by Coomaraswamy (Coomaraswamy, 1930) and saw a parallel in the review of urbanism as described in Jaina canonical literature by Chandra (Chandra, 1949). This was followed by Amita Ray's comprehensive review of Buddhist and Jaina literature as sub-altern information sources on Indian settlements in the period between 150 BCE and 350 CE provides a vast literature review on historic rural India along with a comparative review of contemporaneous Hindu literature such as the Grihyasutras, Dharmasutras etc. (Ray A., 1957). A similar method of an extensive literature review across religions and time periods is found in Bhattacharya's study of historic Indian art and architecture (Bhattacharya T., 1947).

#### 2.1.3.1.5. Post-2000 CE Seminal Works

Chakrabarti's (Sachdev's) review of the literal tradition of Vāstuśāstra as compared to the equivalents in practice and beliefs (Chakrabarti, 1999) revived some scholarly conversations around Vāstuśāstra in Indian academia; which was supported by her subsequent publications on the *aya* number theory (Chakrabarti, 2000) and investigations of Vāstu norms as applied to settlement planning (Sachdev & Tillotson, Building Jaipur: The Making of an Indian City, 2002). A wide array of novel views on the ontology of Vāstuśāstra and its applicability such as the revival of industries, improving hospitals, modern town planning etc. was brought together via an all-India symposium and edited by Vasudev (Vasudev, 1998). A comprehensive review of literature was undertaken by Ambatkar (Ambatkar, 1999) for his research on Vastuvidya; and contemporary literature on Vāstuśāstra has been reviewed as compared to original authoritative literature at length by Otter in his work on the origins and development of Vāstuśāstra (Otter, 2016). The

### 2.1.3.2. Contemporary Rationalisation of Vāstuśāstra

#### 2.1.3.2.1. Alien Ontological Concepts

The generic architectural principles that are usually discussed in historical authoritative Vāstuśāstra literature include (Balasubramanian & Nagan, 2015):

1. Examination and Selection of Site - *Bhu Pariksha*
2. Determining the Orientation - *Dik Nirnaya*
3. Building measurement Test - *Aayadi Gananam*
4. Vastu Purusha Mandala - *Padavinyasa*
5. Zoning - *Griha Vinyasa/Sthana Vinyasa*
6. Door openings - *Dwara Sthana*
7. Proportion of the building - *Bhulamba vidhanam*

The texts do not explicate the reasoning behind the prescriptions on the above subjects and others, and usually attribute them to being instrumental in creating prosperity, wellbeing, peace etc. (Balasubramanian & Nagan, 2015) (Vatte, 2002). Some of the contemporary literature on Vāstuśāstra attempts to explicate the prescriptions and norms present in the texts on the basis of novel and oftentimes alien ontological concepts. These are termed as alien ontological concepts because the original texts do not explicate their prescriptions through the use of similar epistemologies and technologies; thus rendering their application in critical reviews of Vāstuśāstra both anachronistic and alien. Some examples of such concepts are colour (Saran & .Shirodkar, 2017), energy/urja (Kulkarni & Bharat, 2007), the five elements (pancha-tattva) (Saran & .Shirodkar, 2017), cosmic rays and magnetic fields (Ananda, 2005) (Fazeli & Goodarzi, 2010).

Even Feng Shui, which are Chinese traditions of geomancy and divination with unique and contextual literature that is at least 2000 years old if not more (Field, 2003), has been integrated into Vāstuśāstra literature through forced parallels (Saran & .Shirodkar, 2017) (Otter, 2016).

#### 2.1.3.2.2. Methodology and Research Techniques and Tools

The most common tendency among the literature reviewed for this research is an absence of historicizing of the reference literature in terms of time, place, people etc. The methodology of survey-based papers are not discussed in detail, with a clear attestation of the standard text referred to for norms often being absent. The results are frequently merged with anecdotal evidence and generalisations without data; with the persistent presentation of the literature as indicative proof of compliance in the undefined past.

#### 2.1.3.2.3. Response-Based Research

Some literature supports compliance with these norms through the results taken from surveys and/or interviews, such as (Batra, Sangwan, & Mehta, 2018) (Kshirsagar, Kotian, Surana, Kamthe, & Lomte, 2019). The discussion on methodology, survey design, choice of respondents (religion, age, rural/urban etc.) etc. is not treated with detailed discussions, and the aspect of replication of results is never discussed in the literature reviewed.

#### 2.1.3.2.4. Vāstuśāstra and Sustainability

Some literature also explores it from the lens of sustainable building principles such as (Purkar, Narad, & Kothalkar, 2019) (Patra R. T., 2016) (Fazeli & Goodarzi, 2010) (Agrawal, Mirajkar, & Singh, 2016) (Venugopal, 2012) (Gupta S., 1999) etc.; and some of them identify many parallels between the principles in contemporary sustainable design and the prescriptions found in Vāstuśāstra literature; yet, these results could be skewed due to the following conditions:

1. Individual texts are not taken, instead the entire body of literature is taken as a representative for Vāstuśāstra
2. Context of the text (region, time period, author's specialization etc.) are not explored in the methodology
3. The prescriptions selected are without attribution to specific texts, yet, the results are generalized to the entirety of literature
4. The texts themselves are not cited as having provided these prescriptions for the specific purposes of reducing heat gain, solar incidence etc., though the research attributes this purpose to them due to the parallels
5. The prescriptions which do not map over as easily to the explanations offered by sustainable building paradigms are not discussed

#### 2.1.3.2.5. Integration into Modern Practice

Contemporary literature and research on Vāstuśāstra exhibits a trend for rationalizing the prescriptions and even the epistemology of Vāstuśāstra on the basis of contemporary principles such as sustainable building design, or in some cases, in terms of scientific concepts such as magnetism, solar radiation, cosmic rays etc. (Otter, 2016). These include calls for beginning empirical research on the scientific aspects of Vāstuśāstra (Rayjada & Chauhan, 2016), unqualified comparisons of the technologies of AR (augmented reality) and IoT (Internet of Things) with Vāstuśāstra etc. The application of Vāstuśāstra principles to modern practice is a call often met in such rationalizing

literature (Rayjada & Chauhan, 2016) (Khan & Varadarajan, 2016) (Chakrabarti, 1999) (Acharya P. K., 1933).

### 2.1.3.3. Relevance for Settlement Planning

Contemporary literature argues often for compliance with the rules found in Vāstusāstra for the ideal planning of settlements such as cities, towns etc. (Acharya P. K., 1933) (Agrawal, Mirajkar, & Singh, 2016) (Ambatkar, 1999) (Chakrabarti, 1999) (Dallaporta & Marcato, Some Considerations on Organisation of Territory in Ancient India (seventh century BC - twelfth century AD) (Based on the Sample Area between Farrukhabad and Shah Alampur, U.P.), 2010) (Dutt B. B., 1925) (Michell, City as Cosmogram: The Circular Plan of Warangal, 1992) (Sarkar K. D., 2016) (Raina & Madapur, 2018).

In fact, the analyses of settlement planning as described in the Vāstusāstra through space syntax theory (Das & Rampuria, 2015) and urban wayfinding theories are also found in contemporary literature. Some research studies literature across different domains to both historicise and analyse the understandings of building patterns of early medieval urban settlements (Thakur, 1994) (Gupta N., 1993) (Sinha A., 1998) (Kak, 2005) (Deshkar S. M., 2010) (Raina & Madapur, 2018) (Das & Rampuria, 2015). Empirical analyses of built settlements, both historic and current, to understand the applications of the texts into urban fabric was found to be sparse (Palani, 2019) (Patwari, 2019) (Seth, 2018) (Dutta & Adane, 2018) (Thilagam & Banerjee, 2016) (Ghosh & Mago, 1974). In fact, Vāstusāstra-based analyses of existing towns, Jaipur (Sinha A., 1998) (Sachdev & Tillotson, Building Jaipur: The Making of an Indian City, 2002) and Madurai (Smith J. S., 1976) (Ayyar, 1913), both of which are renowned in Indian popular literature to have been settlements planned on the basis of Vāstusāstra; do not have any documented contemporaneous evidence to validate these claims (Sinha A., 1998) (Sachdev & Tillotson, Building Jaipur: The Making of an Indian City, 2002).

The most pointed criticism offered for the identification of these cities with the plans described in the Vāstusāstra texts are that the time period of development of these towns were over a long period of time (sometimes spanning centuries, under different rulers, sometimes from non-Indian religions as well), whereas the text(s) that is claimed to have informed these developments does not correlate well with this time period (Desai, 2012).

## 2.2. Key Religious Literature

### 2.2.1. Vedic Hindu Religious Literature

#### 2.2.1.1. Rig Veda

The scriptures of Vedic era India considered the art of architecture as essential to the genesis of the universe. Singh mentions a hymn to the god Vishvakarman in the Rig Veda (10.81) that imagines Vishvakarman to be the creator god – as a sculptor, smith, woodcutter, or carpenter — as well as the first sacrificer and the sacrificial offering itself (Singh U., 2008). Extensive summaries of the Vedic period as understood through the 4 Vedas - Rig, Sama, Yajur and Atharva, are provided by Keith (Keith, 1925) and Ragozin (Ragozin, 1895) through their interpretation of the Vedic corpus. The Vedas were also subjected to philological, historicism and linguistics studies by various scholars (Witzel, Early Sanskritization. Origins and Development of the Kuru State, 1995) (Parpola, 1974). Some research includes comments on the similarity or dissimilarity of the early Vedas and the Harappan cultures (Thapar, Hindutva and History, 2000); in fact dating the Vedas is an exercise that is still widely debated (Witzel, 2005) (Kazanas, The Rgveda pre-dates the Sarasvati-Sindhu Culture, 2009) (Kazanas, 2011) (Nene, 2012). The links between Vedic literature and Vastu literature has been explored in various works but has not been conclusively demonstrated (Bafna, 2000) (Kak, 2002) (Kak, Early Indian Architecture and Art, 2005) (Bhattacharya T., 2006) (Otter, 2009).

##### 2.2.1.1.1. Vāstospati

The name Vāstospati occurs only seven times in the Rig Veda (Macdonell A. A., Vedic Mythology, 1897); and the term Vāstu is often meant in the sense of 'place' or 'site', as glossed by the commentator Sayana (Raddock, 2011). Keith offers this explanation for the term (Keith, 1925):

*The god [Vāstospati] is clearly the god of the house, who when a new house is built comes and abides in it.*

##### 2.2.1.1.2. Tvastr

Tvastr is a Rigvedic God who makes images of the gods and can control their behaviour accordingly (Kosambi D. D., 1963). Tvastr is the creator and guardian of all embryos – divine, human, or animal; with the name signifying 'carpenter' by the time of the Atharva Veda (AV. xii.3.33; Amarakosa 2.10.9; 3.3.35) (Kosambi D. D., 1963). Kosambi considers Tvastr to be a cult figure from the pre-Aryan background who is in the south of India worshipped as Visvakarman by old school sculptors and image-makers. Kosambi posits a partial materialist explanation for the decay of Tvastr's identity as the

craftsman-god due to the rise of warlike nature and civil strife in contemporary society, thus reducing the importance of carpentry, building, craftwork etc. (Kosambi & Syed (ed.), 1985)

#### 2.2.1.1.3. Vishvakarma

The scriptures of Vedic era India considered the art of architecture as essential to the genesis of the universe. Singh mentions a hymn to the god Vishvakarman in the Rig Veda (10.81) that imagines Vishvakarman to be the creator god – as a sculptor, smith, woodcutter, or carpenter — as well as the first sacrificer and the sacrificial offering itself (Singh U. , 2008). Visvakarman in Rig Veda 10.81.3 has eyes, faces and arms in all directions (a characteristic of the later creator God Brahma); he is responsible for the creation or rather fabrication of heaven and earth: by way of “nistataksuh” (x.81.4) – which implies creation via carpentry (Kosambi D. D., 1963). In the Rig Veda, he is not especially connected with house-building but the connection is strengthened over the ages until he is representative of all architectural knowledge (Bhattacharya T. , 2006, p. 12). He is the quintessential “divine architect” who is attributed with the first use of the cosmic ‘Vastu Purusha Mandala’ as well as the building of various divine/mythological cities such as – Indra’s heavenly city – Amaravati, Krishna’s coastal city – Dwarka etc. (Rao, 2012).



Figure 2-1: An illustration of Vishvakarma - the divine architect (Source: Rao, 2012)

#### 2.2.1.1.4. Maya

Maya is the second most famous architect-builder in the Hindu religious scriptures after Vishvakarma, though he is only a demigod or sometimes considered a sage (Acharya P. K., 1933). He is considered to be the son of the sage Kashyap, and referred to as a Daitya/Asura (demon class of beings). He is known as the “Architect of the Asuras” and is famous in scriptures for having designed and built the mythical city of Lanka for Ravana (in the Ramayana), and the mythical city of Tripura for the Rakshasas.

#### 2.2.1.1.5. Settlements in Vedic period

Bhatnagar lists the following terms from the Rig Veda which are used to refer to a locality or settlement (Bhatnagar, 1932):

1. Gaya
2. Gr̥ha
3. Pastya
4. Harmya
5. Grāma
6. Pūr
7. Viś
8. Rāṣṭra

The opinion of Bhatnagar is that the first four terms were variant forms of Gr̥ha itself; with the four dominant administrative units being Grāma, Pūr, Viś and Rāṣṭra alone (Bhatnagar, 1932, p. 530).

#### 2.2.1.1.6. Pura in Vedic literature

The word “pura” is a frequently occurring word in the Vedas, and are found in regular association with the *dasyus* and the other enemies of the Vedic composers; with consensus being that the early Vedic people were not city builders (Sharma T. R., 1978). Though In later Vedic literature, the term could mean ‘rampart’, ‘fort’ or ‘stronghold’; the meaning of *pura* as a city is considered to be a later development (Sharma T. R., 1978, p. 224). Research continues on this aspect with varied approaches, such as the interpretation of the term as an introspective spiritual metaphor (Jurewicz, 2010) or as a reference to the mercenaries and troop leaders of the Dasas of the Vedas (Mazumder, 2013).

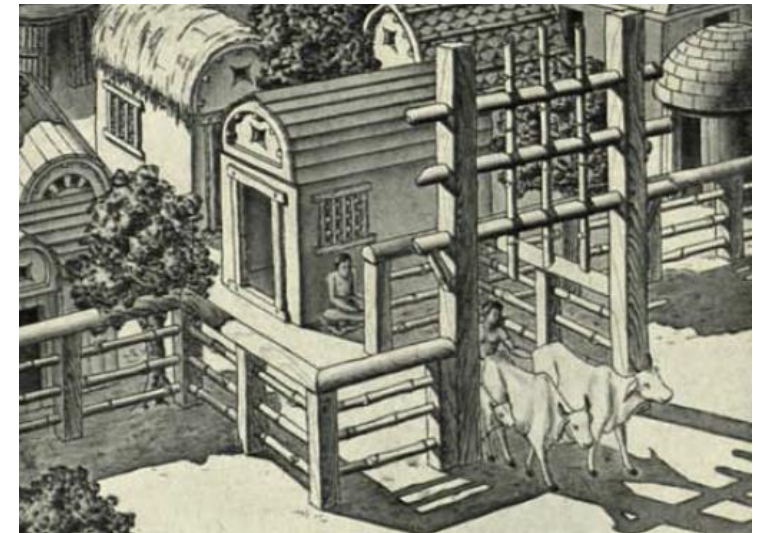
The term later came to mean a rampart, stronghold or fort, of considerable size and built by collective efforts, as implied by their descriptions of being ‘broad’ (*prthvī*), ‘wide’ (*urvī*), built of stone’ (*aśmamayī*), built of / as strong as iron (*āyasyī*), full of kine (*gomatī*), with a hundred walls (*śata- bhuji*) etc. (Macdonell & Keith, 1912). Their



descriptions imply they were used to hold cattle; though the perception of *purās* as permanently occupied fortified places is not yet conclusively demonstrated. It is considered unlikely that the early Vedic period witnessed developed city life; with Vedic literature hardly going beyond mentions of the village (Macdonell & Keith, 1912) (Thapar, *Hindutva and History*, 2000).

#### 2.2.1.1.7. Grāma in Vedic literature

Bhatnagar opines that the term *grāma* initially referred to a band of warriors who were not a part of the main body of the Aryan people, for purposes of war or colonization; which later came to refer to the settlements settled by these bands of people (Bhatnagar, 1932, p. 531). In the early Vedic times, the territory assigned to a *Viś* (groups of families) with their cattle and other possessions was formed into a unit of settlement, called a *Grāma*, as also was the name of the land assigned to it (Bhatnagar, 1932, p. 531).



*Figure 2-2: Brown's artistic representation of the gateway and fence of a Vedic village*  
Source: Brown, 1959

The Vedic village or *grāma* was composed of an aggregation of many familial clans or “*kulas*”; each of which lived in independent houses called “*griha*” (Ray A. , *Villages, Towns and Secular Buildings in Ancient India*, 1964). A *griha* or a household was a house within an enclosure (sometimes with a cattle shed or granary), headed by the father or the eldest brother (*kulapa* or *kulapati*) (Ray A. , *Villages, Towns and Secular Buildings in Ancient India*, 1964). The village houses were surrounded by the residents’ individual farming plots, followed by the communal pasture lands (which may/may not have had protective walls) beyond which lay the “*aranya*” (forest) where hermits, recluses and outcasts lived in rudimentary shelters (Ray A. , *Villages, Towns and Secular Buildings in Ancient India*, 1964). Each Vedic-Aryan rural settlement appears to have had a public village assembly hall (presumably in the village’s centre) where village festivities, ceremonies and discussions occurred. The boundaries of settlements were defined by

natrnl features such as forests, thickets, rivulets, hills, etc. The roofs were made of reed and straw, the columns and rafters were made of locally available timber (of mango, bamboo etc.), and mud plastering appears to have been known (Ray A. , 1964).

### 2.2.1.2. Atharva Veda

The Atharvaveda Śāntikalpa prescribes certain norms directed towards Vāstospati through the vāstospatyagaṇa ritual, such as: ceremonies to avert evil effects on one's prodigy, the ceremony of Vāstospati during the consecration of a house, or the ceremony of Vāstospati for one who desires welfare (Raddock, 2011). The Atharvaveda, especially hymns at VII III 12 onwards and IX 3 onwards etc., mention a "mistress of the house" and prescribe certain hymns to be uttered during the raising of beams/rafters of the house (Bloomfield, 1897) (Bhattacharya T. , 2006).

### 2.2.1.3. Sthāpatya Veda

#### 2.2.1.3.1. Origins

The Sthāpatya Veda. The origins and contents of this text is unknown, uncertain and no critically edited original manuscript has been published for the same currently.

#### 2.2.1.3.2. 'Upaveda' Status

Most modern and ancient literary traditions consider it to be an 'Upaveda' (a category of knowledge (art or science) regarded as supplementary to the Vedas, and sometimes artificially aligned with a particular Vedic school - Śākhā (Johnson, 2009)) – a category distinct from though often conflated with that of the Śāstras. This distinction is subtle but not useful since the Vāstu corpus can be classified under both, i.e. Sthāpatya Veda as an Upaveda and Śilpaśāstra as Śāstra. Essentially, the historical literary status of the Sthāpatya Veda is not certain since no scriptural or other ancient literature contains extant references to the Sthāpatya Veda's claim to being an 'Upaveda'; for example, Śaunaka's Caranavyūha - a treatise on the schools of the Veda by the sage Śaunaka (and one of the rare references in historic literature to the classification of Upavedas w.r.t. the Vedas) classifies the Upavedas (w.r.t. their associated Vedic texts) thus (Śaunaka, 1938, p. 57):

- 1) Āyurveda (Rigveda)
- 2) Dhanurveda (Yajurveda)
- 3) Gāndharvaveda (Sāmaveda)
- 4) Arthaśāstra (Atharvaveda)

However, some claim the text as an Upaveda of either the Rig Veda ( (Mohanty V. L., 2012), (Dighorikar & Haridas, 2014)), or the Atharva Veda (BhanuTej, 2013), or as an Upaveda without an explicitly identified Veda (Priya, Goel, & Kumar, 2021). These

claims of Veda-Upaveda associations are asserted without literary references or quotations from historically and critically validated texts being provided.

#### 2.2.1.3.3. Attributed Contents

The text considered to have contained information and prescriptions on at least four different domains:

- 1) Architecture - (Patra R. , 2006) (BhanuTej, 2013) (Sthapati, 2005)
- 2) City planning - (Raina & Madapur, 2018)
- 3) Mathematics - (Dighorikar & Haridas, 2014) (BhanuTej, 2013) (Sthapati, 2005)
- 4) Sculpture and allied arts (Sthapati, 2005)

Yet, due to the absence of the any verified original text thus far, the actual contents of the Sthāpatya Veda are asserted by circular literary references and thus not yet validated. The text and its attributed contents have been endorsed, interpreted and applied by at least three different authors in popular treatises:

- 1) Ganapati Sthapati – Building Architecture of Sthāpatya Veda (2001)
- 2) Maharishi Mahesh Yogi – Maharishi Sthāpatya Veda <sup>TM</sup>
- 3) Bharati Krishna Teerthaji Maharaja – Vedic Mathematics (1965)

The perspective and contents of each interpretation is different from each other, with significant differences in their applications.

#### 2.2.1.3.4. Ganapati Sthapati's Interpretation

The origin of the text called Sthāpatya Veda, according to Ganapati Sthapati, is from a fivefold family of Vedas which were descended from a single source known as the Pranava Veda – a statement that Ganapati supports with a quote from the Bhāgavata Purāṇa (Sthapati, 2005, p. xv). The Bhāgavata Purāṇa itself is a text composed most probably between the 700 CE and 1000 CE, with some early portions parts being possibly composed 500 CE onwards (Sheridan, 1986, p. 6). Critically, the quotes from the Bhāgavata Purāṇa as provided by Ganapati Sthapati seem to support the assertion of the singular Veda termed as the Pranava Veda, and the five subsidiary Vedas that Ganapati Sthapati claims was derived from it (Āyurveda (medicine), Dhanurveda (military science), Gāndharvaveda (music), Sthāpatyaveda (architecture), and Itihāsa-Purāṇa (epics-history-myths-scriptures)) (Prabhupāda, n.d.). However, the five domains (in Tamil) and their associated Upavedas that are 'reinterpreted' by Ganapati Sthapati as being derived from the Pranava Veda are (Sthapati, 2005, p. xv):

- 1) Eial (literature/prose) – Sabda vedam
- 2) Esai (music) – Gāndharva vedam
- 3) Natam (dance) – Nātya vedam



- 4) Sirpam (sculpture) –Sthāpatya vedam
- 5) Pranavam – Pranava vedam

This latter division overlaps significantly with the supposedly antique Sangam Tamil conception of ‘Muttamizh’, i.e., the three divisions of the arts in ancient South India – ‘Iyal’ (literature), ‘Isai’ (music), and ‘Natakam’ (theatre) (Pandithar, 1917, p. 268). Yet, it is to be noticed that in Ganapati Sthapati’s work, the fivefold division of the arts as well as the texts attributed to them are asserted without supporting scriptural or literary references – neither for their derivation from the Bhāgavata Purāṇa’s contents nor from any other literary source.



*Figure 2-3: Viswakarma Siva as pictured in Ganapati Sthapati's work 'Building Architecture of Sthāpatya Veda'*  
Source: Ganapati Sthapati, 2005

The work also propounds a radically different theology, ontology and epistemology for Vāstuśāstra; such as:

- 1) Attribution of all knowledge of Vāstuśāstra to the five-headed deity ‘Viswakarma Siva’ – who is asserted to be the patron-deity of the ‘Sthāpatīs’ and ‘the artist-community’ of yore; whose five heads were Sabda Veda, Gāndharva Veda, Nāṭya Veda, Sthāpatya Veda, and Pranava Veda which were later named as Sadyojatham, Vāmanam, Tatpuruṣham, Aghoram and Eśānam (Sthapati, 2005, p. xiv). The nearest historical equivalent is the five-headed prime deity of Śaiva Siddhānta theology – Sadaśiva (Sanderson, 2009); the evidence for whose worship is historically and comparatively more established than that of Viswakarma Siva
- 2) The foremost practitioner and compiler of this domain (Vāstuśāstra) is asserted to be the mythological demon-sage-architect Maya (Māmunimayan), whose importance is signified by Ganapati Sthapati referring to Vāstuśāstra as the ‘Mayonic science’ throughout the work (Sthapati, 2005)

- 3) Equation of Vastu with energy, Vāstu with matter, and their relationship asserted as being as proposed by Einstein; all of which are claimed by Ganapati Sthapati as having been supported by early Indian scriptures, such as the Upanishads (Sthapati, 2005, pp. xiv-xvi).
- 4) The source of all knowledge of the domain of Vāstuśāstra being contained in the ‘Sthāpatya’ Veda (or the ‘Vaastu Veda’); the designers and builders who apply this knowledge being the ‘Vaastu Vedins’ or the ‘Sthāpatya Vedins’ or ‘Sthāpatīs’ or ‘Vishwakarmas’; the treatises written on these subjects being known as ‘Vaastu Vidya’, ‘Vaastu Shastra’ or ‘Vaastu Tantra’ (Sthapati, 2005, p. 4)

These claims are not shared or supported by other research published in this domain, especially by authors and researchers involved in the historical review of the practice and literature of early historic Vāstuśāstra in India.

#### 2.2.1.3.5. Maharishi Mahesh Yogi’s Interpretation

Sthapatya Veda is the ‘system of country, town, and home planning in accord with Natural Law’ restored by Maharishi Mahesh Yogi (Maharishi World Peace Society, n.d.) by working with ‘the foremost experts of Sthapatya Veda in India’, after ‘systematically reviewing and evaluating all the pieces’ (Fortune Creating Buildings, 2008). The knowledge in this domain is stated to have been ‘fragmented or lost until recent times’, until the revival and restoration undertaken by Maharishi Mahesh Yogi (Fortune Creating Buildings, 2008). The epistemology of the domain, as per the quote attributed to Maharishi Mahesh Yogi is thus (Maharishi World Peace Society, n.d.):

*‘Sthapatya Veda is that aspect of the Cosmic Knowledge of Natural Law which maintains the buildings in which the individual lives and works, and the environment in which he moves, well set in cosmic harmony.’*

The information on ‘Vastu architecture’ in the Maharishi Mahesh Yogi ecosystem of ‘Maharishi Sthapatya Veda’ and its associated content is claimed to be from ‘Manasara and the Maya Mata and other ancient Sanskrit texts that describe the knowledge (Veda) of establishing form (Sthapatya)’ as per the design and construction consultancy (called Fortune Creating Buildings) that has trademarked these knowledge products (Fortune Creating Buildings, 2008). ‘Maharishi Vastu’, ‘Maharishi Vedic’, ‘Fortune-Creating’ and ‘Maharishi Sthapatya Veda’ are all protected trademarks in the United States and are to be used under sublicense or with permission (Fortune Creating Buildings, 2008).

The principles of the ‘Maharishi Vastu’ system of design and construction have been applied at various scales ranging from homes in multiple continents (Fortune Creating Buildings, 2008) to an entire city (called Maharishi Vedic City near the city of

Fairfield in the State of Iowa) planned along the principles of this system (Maharishi Vedic City, 2010).



**Figure 2-4: Planned areas of a sector of the Maharishi Vedic City**  
Source: *Sanskriti Magazine*, 2014

Research has also been conducted on the effects of living and working in homes, offices etc. designed as per the system of Maharishi Vastu architecture (Lipman, 2021) (Maheshwari & Werd, 2019) (Travis, et al., 2005a) (Travis, Munly, Olson, & Sorflaten, 2005b).

‘Sthapatyaved’ is also one of the disciplines in Maharishi Mahesh Yogi’s exclusive Vedic Science and Technology academic programmes, with at least 5 courses (ranging from certificate courses to undergraduate programmes to postgraduate to doctorates) being offered in the ‘Department of Jyotish’ (astrology) at institutes such as the Maharishi Mahesh Yogi Vedic Vishwavidyalaya in India (MMYVA, 2019).

It is to be noticed here that both the Manasara and the Mayamata can be dated to the post-1000 CE period (Bhattacharya T. , 2006) (Dagens, 2007). Thus, these texts are certainly not ‘Vedic’. The extant Vedic texts do not have discernible treatments of the prescriptions on orientation, zoning etc. that are identified under the tenets of the ‘Maharishi Vastu’ system of design and construction; instead they are to be found in the much later dated (post-500 CE) and distinctly non-Vedic texts such as the Pratiṣṭhāntra corpus (Mills, 2019), the Brihat Samhita (Iyer, 1884) etc. The published research literature on Maharishi Vastu architecture is almost wholly by institutes and individuals associated with the Maharishi Mahesh Yogi ecosystem (such as the Maharishi University of Management or Fortune Creating Buildings). The published literature mostly concerns itself with empirical experimental validation of the system than with scholarly analyses

of its literary source materials. The historical legitimacy and scriptural validity of the system and its attributed literary sources are established as a *fait accompli* in the design of many of these experiments, which then proceed to ascertain the validity of the effects expected of living in buildings designed as per the system’s principles. Thus, it is not possible to validate or invalidate the claims and practices of Maharishi Mahesh Yogi or the associated ecosystem of individuals and organisation in the absence of exhaustive critical analysis and scholarly documentation of the literary sources referred to by Maharishi Mahesh Yogi and his collaborators, the methods of hermeneutics and historical criticism used when consulting these texts, peer-reviewed publication of the process of restoration and synthesis of the contents of the ‘fragmented or lost’ Sthapatya Veda text(s) and system(s) etc.

#### 2.2.1.3.6. Bharati Krishna Teerthaji Maharaja’s Interpretation

Bharati Krishna Teerthaji Maharaj is attributed the authorship of the book ‘Vedic Mathematics’, which he began writing in 1957 (Tirtha, 1999; Kandasamy & Smarandache, 2006) and was posthumously published 5 years after his death in 1965 (Tirtha, 1965). The book was popular and was considered for inclusion in the the National Council of Educational Research and Training (NCERT) curricula (Taylor, 2014). The contents of the work were supposedly contained in the pariśiṣṭa (a supplementary text/appendix) of the Atharvaveda (Dani, Myths and reality : On ‘Vedic mathematics’, 2006); yet, the contents were not found in any of the extant appendices of the Atharvaveda (Plofker, 2009; Dani, Myths and reality : On ‘Vedic mathematics’, 2006) and the author when challenged to locate them in the aforesaid texts, responded that they were to be found only in a hitherto-undiscovered version chanced upon by the author alone (Shukla K. , 2019). The editor of the book V. S. Agrawala is attributed with having accepted the absence of the contents of the work in extant Vedic texts (Dani, Myths and reality : On ‘Vedic mathematics’, 2006, p. 1) and stated thus (Tirtha, Vedic Mathematics, 1965, p. vi; Kandasamy & Smarandache, 2006):

*“It is the whole essence of his assessment of Vedic tradition that it is not to be approached from a factual standpoint but from the ideal standpoint [...] That approach entirely turns the table on all critics, for the authorship of Vedic mathematics need not be labouriously searched for in the texts as preserved from antiquity. [...] But this work of Sri Sankaracharyaji deserves to be regarded as a new Parisista by itself and it is not surprising that the Sutras mentioned herein do not appear in the hitherto known Parisistas.”*

Thus, while the text itself restricts itself to claiming an origin in the Atharvaveda’s lost pariśiṣṭas, publications are available which assert that the the Sthapatya Veda was the

appendix from which Teerthaji's work was derived (Dighorikar & Haridas, 2014). The text's claims to being 'Vedic', to being 'Mathematics', to being derived from the Vedas' extant contents, and indeed the very domain of 'Vedic Mathematics' have all been invalidated to various degrees by various historians of mathematics (Dani, 1993) (Kandasamy & Smarandache, 2006) (Dani, 2006) (Plofker, 2009) (Bal, 2010) (Shukla K., 2019).

#### 2.2.1.3.7. Conclusion

The Sthāpatya Veda and its contents (as presented by each of these three authors) are the most influential conceptions and popular treatments of this subject in the recent past; but they are not the only possible or only extant interpretations of this domain/text. Yet, each author has presented vastly different conceptions of the possible contents and intents of the text and its applications. This has reduced the scope for cross-referencing the published literature to find areas of overlap that could lead the investigation and analysis of these purportedly lost text further. The lack of a historically and critically validated source text also further complicates the claims for its authenticity and influence. Subsequent literature on this particular text and its traditions are not rigorously researched and are difficult to validate. Thus, the text(s) cannot be meaningfully used as an early historical source of technical literature on the theory and practice of Vāstuśāstra.

#### 2.2.1.4. Post-Vedic Literature: Brahmanas, Aranyakas etc.

##### 2.2.1.4.1. Cities and forts in post-Vedic literature

It is in the later post-Vedic texts such as the Taittiriya Aranyaka, popularly dated to the 6<sup>th</sup> century BC, that the word 'nagara' is found, implying a town (Macdonell & Keith, 1912) (Singh U., 2008). The siege of forts is apparently mentioned in the Samhitās and Brāhmanas (Macdonell & Keith, 1912). Kosambi opines that the other form of settlements as per the Yajurveda-Brāhmanas continued to be a mobile seasonal settlement of cattle herders who moved from one territory to other (Kosambi D. D., 1963).

##### 2.2.1.4.2. Grāma in post-Vedic literature

The period is taken to have witnessed the rise in the concept of land ownership and the establishment of the Grāma as a distinct administrative unit, governed by regnally-elected officers and bloodline-based leaders such as the grāmaṇī, sthapati, grāmavādin etc. (Bhatnagar, 1932).

##### 2.2.1.4.3. Sthapati in post-Vedic literature

The word "Sthapati" is first defined in post-Vedic literature, especially the Śrautasūtras and Grhyasūtras, in a context that suggests it was a term for an administrative

position (Gopal, 1959). The term does not prominently imply architects in traditional Indian literature until the Pratiṣṭhāntara series of texts which were composed and redacted post-400 CE across India (Sanderson, 2012). The term is considered to refer to an administrative officer of a high rank; with Gopal stressing on the ambiguity of the title by contrasting Eggeling's rendering of the term as 'governor', as compared to Caland's interpretation of it as 'chief judge' (Gopal, 1959, p. 199). Bhatnagar opines that the *sthapati* was an officer in the king's service who was in charge of groups of rural settlements (Bhatnagar, 1932). The *sthapati*, as a part of the 11 *ratnins* of a king's court in the post-Vedic period, could have been an important functionary of the administrative organization in this period (Bhatnagar, 1932, p. 535).

#### 2.2.2. Kalpasūtras

##### 2.2.2.1. Background

Kalpasūtras, which is the collective name for the post-Vedic manuals of Hindu religious practices, were composed and compiled within different Vedic schools (Britannica T. E., 2015). *Kalpa* is one of the six fields of scholarly disciplines known as *Vedangas* (i.e. the accessories to the Vedas); and each manual (written in the aphoristic *sutra* form) explains the procedures (*kalpa*) of a particular Vedic school as per the following different categories: the sacrificial ritual texts (Śrauta-sūtras), the domestic ritual texts (Grihya-sūtras), and the norms for social conduct (Dharma-sūtras, related to the Dharma-shastras) (Britannica T. E., 2015), which when put together, form the largest body of extant pre-Buddhist Indian literature (Gopal, 1959). Their human origin renders them as Smṛiti (Tradition/Recollection) as compared to the divine revelatory nature of Vedic literature, which are considered as Śruti (Revelation/Which Is Heard) (Britannica T. E., 2015). Most of the Kalpasūtras are considered to have been composed between 800 BCE to 500 BCE (Ram, 1959), and are considered indicative of the development of codified rituals pertaining to architectural and construction in Early Historic India (Bhattacharya T., 2006) (Singh U., 2008). The texts known as the Grihya Sūtras, form a part of the Kalpasūtra collection along with the Śrautasūtras and the Dharmasūtras (Britannica T. E., Grihya-sutra, 2015). Some of the early Grhyasūtras contain hymns to be recited during the initiation of the house-building rituals and sacrifices, prescriptions for choosing sites and site divination, norms for laying out houses, palaces and cities etc. (Ram, 1959). The key texts of the Kalpa Sūtras and their extant availability is given below (Muller, 1859, p. 210) (Kocher, 2000, p. 18):

**Table 2-3: Vedic schools and associated known Śrautasūtras and Grhyasūtras**  
*Source: Kochar, 2000*

Veda associated with	Śrautasūtras - extant texts	Grhyasūtras	Dharmasūtras
Rig Veda	Āśvalāyana Śrautasūtra Sāṅkhāyana Śrautasūtra Saunaka-sutra	Āśvalāyana-Grhyasūtra Kausītaki-Grhyasūtra (Bāṣkala śakha) Sāṅkhāyana-Grhyasūtra	Vasishtha Dharmasūtra
Sāma Veda	Lātyāyana Śrautasūtra Drāhyāyana Śrautasūtra Nidana-sutra Pushpa-sutra Anustotra-sutra Jaiminiya Śrautasūtra	Gobhila-Grhyasūtra Khādīra-Grhyasūtra (Drāhyāyana-Grhyasūtra) Jaiminiya-Grhyasūtra Kauthuma-Grhyasūtra	Gautama Dharmasūtra
Kṛṣṇa Yajur Veda	Baudhāyana Śrautasūtra Vādhūla Śrautasūtra Mānava Śrautasūtra Bharadvāja Śrautasūtra Āpastamba Śrautasūtra Hiraṇyakeśi Śrautasūtra Maitra-sutra Katha-sutra Vārāha Śrautasūtra Vaikhānasa Śrautasūtra Laugakshi-sutra	Baudhāyana-Grhyasūtra Hiraṇyakeśi-Grhyasūtra (Satyāsādha-Grhyasūtra) Mānava-Grhyasūtra Bhāradvāja-Grhyasūtra Āpastamba-Grhyasūtra Āgniveśya-Grhyasūtra Vaikhānasa-Grhyasūtra Kāthaka-Grhyasūtra (Laugākṣi-Grhyasūtra) Vārāha-Grhyasūtra Vādhūla-Grhyasūtra Kapisthala-Katha Grhyasūtra (unpublished)	Baudhāyana Dharmasūtra Āpastamba Dharmasūtra
Śukla Yajurveda	Kātyāyana Śrautasūtra	Pāraskara-Grhyasūtra Katayana-Grhyasūtra	Vishnu Dharmasūtra
Atharva Veda	Vaitāna Śrautasūtra Kusika-sutra	Kauśika Grhyasūtra	

### 2.2.2.2. Contents

Ram, Oldenberg, and Buhler all consider the Śrautasūtras, the Grhyasūtras and the Dharmasūtras to be related to each other and possibly composed by authors within the same Vedic school and in some cases by the same author as well (Ram, 1959, p. 7) (Oldenberg, 1886). The Śrautasūtras are texts which describe the norms for the performance of the great sacrifices of its times, the Śrautayajnas, though all the sacrifices, rituals and norms therein may not be traceable to the Brāhmanas or the Vedic texts that preceded them (Ram, 1959). The Grhyasūtras contain details for the performance of domestic ceremonies by householders, and the norms they prescribe are not as strongly

connected to the Vedas and Brāhmanas as the Śrautasūtras but are usually especially enjoined upon the followers of the Vedic schools which composed the Grhyasūtras (Ram, 1959). The Dharmasūtras are compilations concerning laws, regulations and social norms for a wide range of communities such as royalty, commoners, ascetics etc. They are generally derived from prevalent contemporary social customs and texts from specific schools do not necessarily enjoin the norms upon the school's followers; rather the intent is to guide all of society through the norms that are based on both scriptural exegesis and contemporary praxis (Ram, 1959).

According to Sanderson, observance of Śrauta ceremonies declined from 500 CE to 1300 CE with the rise of religious ceremonies which prescribed charitable grant of gifts such as giving cows, land, issuing endowments for building temples and *sattrani* (feeding houses), and the commissioning of water tanks for domestic uses and irrigation (Sanderson, 2009, pp. 41-43, 268-269).

### 2.2.2.3. Relations Between Texts

The three bodies of texts are considered to have grown organically through the influences of particular Vedic Samhitas as followed by particular Śākhās (Vedic school of texts and traditions) along with the regional cultural customs followed by the people of the composer's location (Ram, 1959). The rituals and norms as described in each book vary significantly and are even missing across Śākhās and sometimes within the Sūtras ascribed to the same Śākhā as well; similarly, there are many similarities between Sūtras across Śākhās and higher similarities between Sūtras belonging to the same Śākhā (Ram, 1959). Some texts acknowledge their composition by mortal authors who attempted to codify Dharma (Hindu religious praxis) on the basis of Shruti (Vedas), Smṛiti (religious traditions and collective memory), and the standard of conduct of virtuous and unselfish personages (Ram, 1959).

The relation between the Śrautasūtras, the Grhyasūtras and the Dharmasūtras may be understood thus:- the Grhyasūtras being dependent on the Śrautasūtras for a significant amount of prescriptions but not necessarily being consistently derived from them; the Dharmasūtras being prescriptions derived from empirical, religious, social and ethical bases with inconsistent support in the preceding Kalpasūtras; and, the Śrautasūtras themselves being derivative manuals on the performance of rituals with significant interpolations and extrapolations that separate their contents from being wholly derived or dependent on the Vedic works (Ram, 1959). The key import of this analysis of textual relationships is to demonstrate the contemporary nature of these texts wherein the focus

has shifted from that of specialized esoteric discourses on rituals to generalized prescriptive discourses on the exercise of power over society (Pollock, 1990).

#### 2.2.2.4. Influence on Later Vāstuśāstra

A brief recapitulation of the norms and prescriptions as related to architecture and planning present in the Grihyasutras (Ram, 1959) (Bhattacharya T. , 2006) (Oldenberg, 1886) (Ray A. , 1957) (Otter, 2016) is presented below:

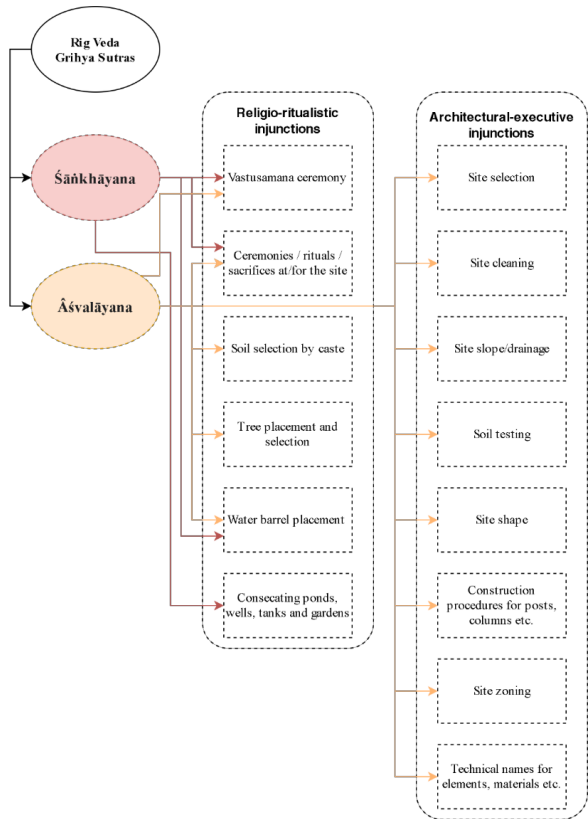


Figure 2-5: Contents relevant to Vāstuvidyā in the Rigvedic Grhyasutras

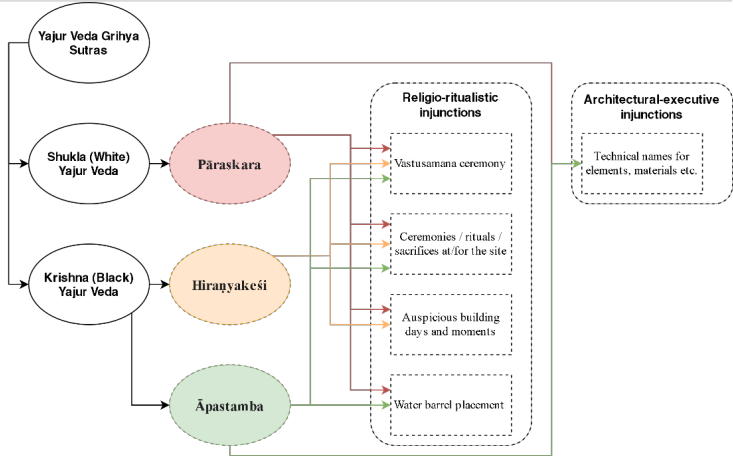


Figure 2-6: Contents relevant to Vāstuvidyā in the Yajurvedic Grhyasutras

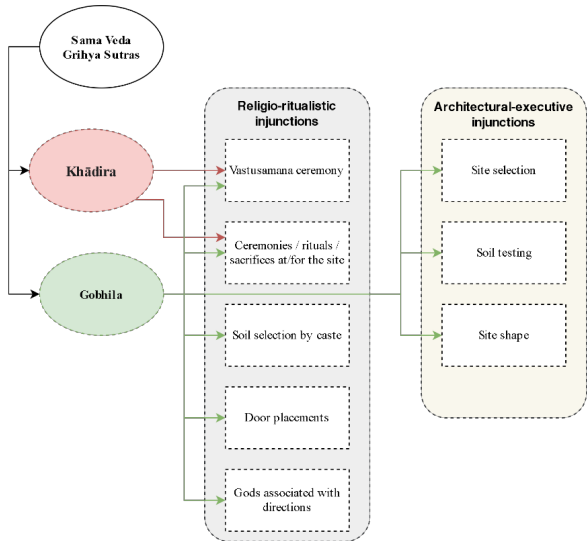


Figure 2-7: Contents relevant to Vāstuvidyā in the Samavedic Grhyasutras

The collection of prescriptions found in these Grhyasūtras, such as those for the selection of type of soil, shape of site, declination of site, orientation of site, trees surrounding or on the site, location of site drainage, testing of soil compaction, testing of



soil absorption, placement of doors, location of zones/functions etc., are a dispersed but extremely influential set of norms that continued to be adapted or replicated in most of the succeeding texts on *vāstu* and/or architecture that the Indian Śāstric literary tradition produced. These seven texts of the *Gṛhyasūtras* family of literature (comprised of at least over 50 texts, with many texts being lost or found only as quotations) are taken to be the source of both methodology and methods by later *Vāstusāstra* literature despite the *Gṛhyasūtra* literature not containing a rigorous epistemological or ontological framework (Otter, 2016). In fact, the *Gṛhyasūtra* texts do not define the source or rationale of these prescriptions, nor are they able to convincingly demonstrate their precedents in Vedic literature (Ram, 1959). Ram also postulates the possibility of local or regional practices being codified and included into the normative framework due to their validation as contemporary social praxis (Ram, 1959); this is exemplified by the fact that the vast majority of *Gṛhyasūtra* literature does not contain prescriptions for *Vāstusāstra*, and nor do they contain technical discussions on architecture and planning – since they were primarily composed as non-technical primers for the performance of domestic rituals (Ram, 1959).

### 2.2.3. Post-Vedic Hinduism

The period between 800 BCE and 200 BCE, is considered by Michaels to be "*a turning point between the Vedic religion and Hindu religions*" (Michaels, 2004); and was a formative period for the rise of Hinduism, Jainism and Buddhism, all of which were influenced by the texts and practices of the Tantras and *Purāṇas* (Nath, 2001). In fact, Nath presents this period as producing "*a sea of change*" in religious attitudes in the history of Hinduism between what Nath terms as "*Brahmanism of the Dharmasastras and 'Hinduism' as reflected in the Puranas*" (Nath, 2001, p. 30). The Epic and Early Puranic period, from c. 200 BCE to 500 CE, is considered as the classical "Golden Age" of Hinduism (c. 320-650 CE), coinciding with the Gupta Empire and the rise of the six branches of Hindu philosophy - Samkhya, Yoga, Nyaya, Vaisheshika, Mīmāṃsā, and Vedānta (Michaels, 2004). The development of the now-dominant sects of Hinduism – Vaiṣṇavism, Śaivism and Śāktism from their roots in local cults for specific distinct deities, was underway in the same time period through the Bhakti movement and the Tantra traditions (Bhandarkar, 1913). This period is followed by the late Classical period or early Middle Ages (650 to 1100 CE), by when classical Puranic Hinduism is well-rooted across India, aided by the consolidation of regional sects via the theology of the Advaita Vedānta tradition (Michaels, 2004).

#### 2.2.3.1. Tantric Religious Traditions

'Tantra' refers to the esoteric traditions of Hinduism and Buddhism, which developed in India from about 500 CE onwards, that were distinctly different from the previous religious traditions of the Indian subcontinent and were described in texts known as Tantras, Āgamas or Samhitās (Padoux, 2013). Some of the new and key features of the Tantric modes of religious worship that separated them from the preceding forms were (Padoux, 2013, p. 2) (Sanderson, 2012):

1. Mantras
2. Puja (Non-Vedic worship)
3. Temples
4. Iconography (development of)
5. Idolatry
6. Initiatory forms of worship through cult-based worship

The term *tantra* literally means 'loom / weave / warp' and can imply a wide range of meanings across time; beginning as a reference to a loom/weaving device in the Rig Veda (Banerjee, 1988) and eventually implying a particular set of doctrines or practices, teachings, texts, systems etc. (Flood, 2006).

These traditions were often transgressive and antinomian, sometimes including rituals requiring meat, alcohol, bodily emissions, sexual practices etc. (Flood, 2006); with arguments for their non-Vedic origins being popular, and their gradual integration into Buddhism and Jainism purported to be from an initial origin in early Śaivism (Sanderson, 1995), and possibly, early Vaiṣṇavism (Bhandarkar, 1913). The majority of the Tantric texts are in the Śaiva traditions (Padoux, 2013), with the dominant Vaiṣṇava and Śākta Tantric literature being represented through the Pāñcarātra (which does not attest itself to being Tantric and resembles Śaiva-Siddhānta in its ritual aspects) and the Śrīkula/Kālikula traditions (which are sometimes antinomian) respectively (Gray, 2016).

The importance of these doctrines to contemporary *Vāstusāstra* is due to the influence upon the later *Vāstusāstra* compilations, of the extensive normative contents of the Tantric texts describing mandalas, sculptures and architecture.



Figure 2-8: Mandala of Vishnu by Jayateja (Pata painting c. 1420 CE, Nepal)  
Source: Los Angeles County Museum of Art, public domain image

### 2.2.3.2. Purāṇas

The Purāṇas are a vast genre of traditional Indian literature that are almost encyclopaedic in their contents, particularly on Hindu religious legends and traditional lore (Bailey, 2001). The topics in these texts are inconsistent both within manuscripts of a text and across different texts; including cosmogony, cosmology, divine genealogies, royal genealogies, temples and pilgrimages, medicine, astronomy, grammar, architecture, theology as well as philosophy (Bailey, 2001). The texts are considered to have been composed over a long period of time between 300 CE – 1000 CE, across various parts of

India (Collins, 1988, p. 36). The individual texts are dated to various periods, but the key Purāṇas are considered to have been initially compiled from the 5<sup>th</sup> century CE onwards; especially for the texts that are essential to the history of Vāstuśāstra, such as the Matsya Purāṇa, Agni Purāṇa etc. (Bhattacharya T. , 1947) (Rocher, 1986). The essential difference between the Purāṇas and the coterminous Tantra texts, which also contain information on similar topics, are that the Purāṇas are comparatively non-sectarian, compiled over longer periods of time, encyclopaedic and do not preach initiation into specific Tantras (Rocher, 1986).

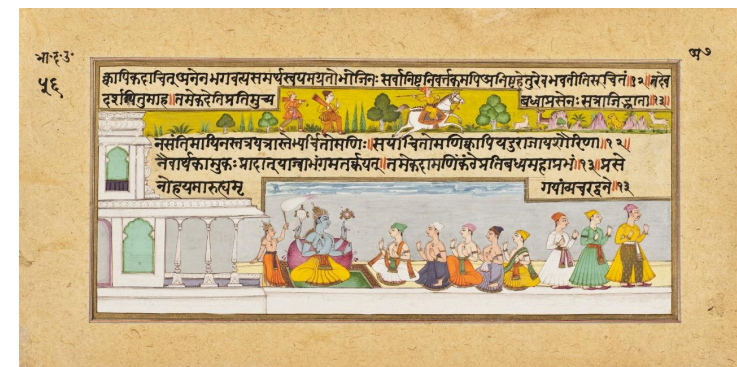


Figure 2-9: Vishnu Discoursing (recto) - Folio from a c. 19th century Kashmir region illustrated Vaishnava manuscript of a Purana  
Source: Los Angeles County Museum of Art

A history written usually in metrical Sanskrit is called a Purāṇa (according to the Matsya Purāṇa), as long as it possesses the following five characteristic descriptions or contents (Rocher, 1986, pp. 24-29):

1. cosmogony describing its theory of primary creation of the universe
2. chronological description of secondary creations wherein the universe goes through the cycle of birth-life-death
3. genealogy and mythology of gods and goddesses
4. Manvantaras (a cyclic period of time identifying the duration, reign or age of a Manu, the progenitor of mankind)
5. legends of kings and people including solar and lunar dynasties

#### 2.2.3.2.1. Hinduism of the Purāṇas

In terms of religious developments, the Hinduism championed by the Purāṇas offers the following developments (Nath, 2001, p. 30ff):

1. Development of pantheon towards sectarian plurality



2. Rise of non-Vedic puja rituals and collective worship modes gaining greater importance than Vedic rituals
3. Mythological overgrowth
4. Changing character and format of Brahmanical texts
5. Assimilation of the elements of Tantras into normative praxis
6. Ideological thrust on *bhakti* as the chief mode of religious attitude with the Purāṇas as its chief disseminator

The chief material changes and changes in praxis that accompanied the rise of Puranic Hinduism were (Rocher, 1986) (Bhandarkar, 1913) (Nath, 2001) (Bhattacharya T. , 1947) (Sanderson, 2009):

1. Rise of idolatry and iconolatry
2. Widespread interest in temple building, especially by kings or nobles
3. Rise in use of stone and brick in construction, especially religious architecture
4. Gradual development of the temple from a religious centre to a socio-administrative hub

These changes appear to be adequately represented in the Purāṇas through their sections on architecture and iconography; reflective of the changing modes of Hindu religious society in the post 500 BCE eras.

#### 2.2.3.2.2. Architecture and Settlement Planning in the Purāṇas

Of the eighteen major Purāṇas considered canonical by most schools, at least the following nine texts contain comparatively detailed accounts on architecture, such as descriptions of pillars, classifications of temples and houses, measurements for houses for particular classes of people etc. (Begde, 1998) (Acharya P. K., 1946, pp. 615--659):

1. Agni-Purāṇa
2. Garuḍa-Purāṇa
3. Brahmāṇḍa-Purāṇa
4. Nārada-Purāṇa
5. Bhavishya-Purāṇa
6. Matsya-Purāṇa
7. Liṅga-Purāṇa
8. Vāyu-Purāṇa
9. Skanda-Purāṇa

Of these texts, only the Agni-Purāṇa deals with town planning in the 106<sup>th</sup> chapter entitled “*Nagarādi-vāstu*” (Shastri, Bhatt, & Gangadharan, 1954) (Acharya P. K., 1946, pp. 615--659). The Matsya Purana is also an important text for it contains some of the

earliest extant prescriptions on the design of temples, sculptures, architectural ornaments, houses etc. (Bharné & Krusche, 2014, pp. 117–121, 39–40) (Kramrisch, 1946, pp. 271-275) (Meister M. , 2003).

#### 2.2.3.2.3. Historicity of Purāṇas

The diversity and wealth of extant manuscripts for various Purāṇas still show a paucity of historical data, i.e. author name(s), the year of their composition etc. were not recorded or preserved as the documents were copied over generations (Rocher, 1986, pp. 115-121). The discovery of manuscripts from the medieval centuries in hitherto unknown locations such as Nepal has established the view among Purāṇa scholars that Pauranic literature has undergone slow redaction and text corruption over time (sometimes even forgeries), along with the sudden deletion of numerous chapters and its replacement with new content so much so that the extant manuscripts of Purāṇas are significantly different from those compiled before the late medieval era (Rocher, 1986, pp. 49-53) (Goodall, Parākhyatantram, 2009, pp. xvi-xvii). The use of these texts as a historical sources has been questioned by both Indian scholars such as Kosambi and foreign scholars such as Basham (Rocher, 1986, pp. 115-121). Dimmitt and van Buitenen comment on the historicism and literary nature of the Purāṇas thus (Dimmitt & van Buitenen, 1977, p. 5):

*“As they exist today, the Puranas are a stratified literature. Each titled work consists of material that has grown by numerous accretions in successive historical eras. Thus no Purana has a single date of composition. (...) It is as if they were libraries to which new volumes have been continuously added, not necessarily at the end of the shelf, but randomly.”*

#### 2.2.3.2.4. Matsya Purāṇa

The Matsya Purana is one of the eighteen Mahapuranas of Indian traditional Purana literature, and one of its earliest texts. The Purāṇa, apart from the five previously mentioned topics that a Purāṇa is supposed to cover by the Matsya Purāṇa’s own definition, also contains descriptions and prescriptions for art work such as paintings and sculpture, detailed sections on Vāstuvidyā provide features and design guidelines for religious and residential architecture (Vāstusāstra), various types of Yoga, duties and ethics (Dharma) with multiple chapters on the value of Dāna (charity), both Shiva and Vishnu related festivals, geography particularly around the Narmada river, pilgrimage, duties of a king and good government and other topics /. Dikshitar considers the sections of this text that deal with architecture and iconography as “*the most interesting and perhaps the most important section*” (Dikshitar, 1935, p. 101). They may not have been completely original work with Dikshitar asserting that the chapters on manvantaras and the dynasties of the Kali age, cosmogony and geography, astronomy and astrology etc. in

the Matsya Purāṇa derive heavily from the Vayu Purāṇa (Dikshitar, 1935, p. 129). The general scholarly consensus is that the Matsya Purāṇa is an old Purāṇa text, first completed around 300 CE, with routine revision, deletion and expansion of constituent sections through the 2nd-millennium CE (Dalal, 2014, p. 250).

The text describes many concepts and frameworks related to Vāstuśāstra such as the classification of temples according to specific parameters, classification of architectural ornamentation, brief descriptions of mandalas and their uses, iconographic details, the dimensions of mansions/houses according to the classes and castes of the residents etc. but does not describe city planning (Oudh, 1916). The chapters 252-257 summarise technical descriptions for identifying a stable soil for home construction, different architectural details of a house, ritual ceremonies related to construction etc. (Bharne & Krusche, 2014, pp. 117–121, 39–40) (Kramrisch, 1946, pp. 271-275) (Meister M. , 2003). This text figures heavily in debates upon the early history, antiquity and maturity of the Vāstuśāstra due to its early attributed date (Bhattacharya T. , 2006) yet the lack of validation about the historicity of the text and its period of composition/compilation lead to scholars often considering the Brihat Samhita as the oldest reliably datable literature that details the ontology and concepts of Vāstuśāstra (Bhattacharya T. , 2006) (Apte & Supekar, 1983).

#### 2.2.3.2.5. Agni Purāṇa

The Agni Purāṇa is a Sanskrit text of the Purāṇa genre and one of the eighteen major Purāṇas. It is likely to have been composed between 600 CE to 1000 CE, with the youngest layers dating up to the 1600s (Hazra, 1940, pp. 134-141) (Rocher, 1986, pp. 31, 136-137). The Chapter 106 of the Agni Purāṇa (Shastri, Bhatt, & Gangadharan, 1954, p. pg. 320ff) describes the “Vāstu relating to cities”; with brief prescriptions on the worship of deities on a mandala at the beginning, choice of site(s), shape of sites, gateways, locating people following different occupations in particular parts of the city, location of temples, types of houses, zoning of functions in houses, brief classification of types of palaces etc. (Shastri, Bhatt, & Gangadharan, 1954).

Significantly, the text does not describe city planning through specific plans/templates, nor does it refer to the Vāstupuruṣamaṇḍala as a framework for conceptualizing the city despite its familiarity with the Vāstupuruṣamandalā in other Vāstuśāstra contexts.

#### 2.2.3.3. Early Vaiṣṇavism

The early history of Vaiṣṇavism is lost to recorded history; with the consolidation of the cults of Vedic-era Vishnu, the deified sage Narayana, the deified Vrishni hero

Krishna, the god of the Bhagavata cult – Vasudeva etc. into the syncretic sect of early Vaiṣṇavism has been explored by scholars in previous research (Bhandarkar, 1913). The doctrines and theology of Vaiṣṇava sub-sects such as the Pāñcarātra began developing from around 300 BCE onwards (Britannica T. E., n.d.) culminating in the post 500 CE period by when the earliest Pāñcarātra Agamas were compiled, disseminated and commented upon (Apte & Supekar, 1983) (Schröder, 1908). The Pāñcarātra doctrine believes in one god only - 'Vishnu' and instructs on the Sāttvata mode of worship (via idols, mandalas, temples etc.) through its agamic texts (Apte P. P., 1991). The Vaikhānasa doctrines are another early Vaiṣṇava sub-sect, but given their preference for worship based on the fire sacrifices as derived from Vedic literature (as opposed to idolatry which requires construction of temples); the Vaikhānasa texts are not considered for this research.



*Figure 2-10: The two deified heroes Samkarshana and Vāsudeva on the coinage of Agathocles of Bactria, circa 190-180 BCE*  
*Source: Classical Numismatic Group, 2017*

The deification of the two foremost heroes of the clan of Vrishni, Samkarshana and Vāsudeva, is known to have occurred before 200 BCE with the some of the earliest material evidence for this apotheosis being the from the Northwestern Indian Indo-Greek empires of the c. 190-180 BCE coinage of Agathocles of Bactria.



Figure 2-11: The 'Garudadhwaja' pillar of Heliodorus dedicated to the deity Vāsudeva at the city of Vidisha in modern Madhya Pradesh (c. 113 BCE)  
Source: Dilip Kumar, 2020

Some of the earliest monumental material evidence for the rise of early sects of Vaishnavism in central India is presented by the c. 113 BCE stone pillar of Heliodorus (an ambassador of the Indo-Greek king Antialcidas from Taxila) which was sent to the Indian ruler erstwhile of Varanasi – Bhagabhadra and dedicated to the god Vāsudeva.

Excavations around 1963–65 by Khare revealed that a mound near the pillar contained brick foundations for the now-lost possibly wooden superstructure of an elliptical temple with a sanctum (*garbhagriha*) and pillared halls (*mandapas*) dated to about 400BCE -200 BCE (Khare, 1975). These evidences alongwith the Hathibada Ghosundi Inscriptions (dated to the 2nd-1st-century BCE) indicate the antiquity of the idolatry of the Vaishnava traditions.

#### 2.2.3.3.1. Harivamśa Purāṇa

The Harivamśa (literally "the lineage of Hari") is an important work of Sanskrit literature, containing 16,374 shlokas, mostly in the anustubh metre, and is also known as the Harivamsha Purāṇa (Lorenz, 2007). This text is believed to be a khila (appendix or supplement) to the Mahabharata and is traditionally ascribed to Vyasa. The text is complex, containing layers that go back to 100CE-200CE (Debroy, 2016); it was a part of the Mahabharata by the 1st century CE, and the Viṣṇu-parva and the Bhaviṣya-parva

portions can be dated to at least the 3rd century CE (Lorenz, 2007). The Harivamśa is not technically a Purāṇa, though referred to as such, with many redacted and compiled versions including interpolated verses over the years (Debroy, 2016).

The clear description of the foundation of the city of Dvaravati in the Vishnu Parva Chapter 58 along with the extension of the city as Dvārakā by reclaiming land from the sea, allows for a study of the process of urban design and town planning as attributed to northwestern India around 200 CE – the approximate time of its compilation. The extract from the translated work given here below provides the relevant details (Dutt M. N., 2020 (1897)):

#### Chapter CXV: The Laying Out of Dwarka

*Vaishampayana said:—Thereupon when the sun rose in the clear morning, Hrishikesha ... sat for some time at the outskirts of the forest, began to survey it for finding out a site where he would build a fortress. ...Thereafter in an auspicious day under the auspices of the planet Rohini he offered immense presents to the Brāhmanas and made them perform benedictory rites. He then commenced the work of the building of the fort. Thus when the construction of the fort was taken in hand, [Krishna], said to the Yādavas (3–4). "O ye Yādavas, behold the site that I have selected like unto the very abode of the gods. I have also selected the name under which it will be celebrated on earth (5). I am laying out courtyards, promenades, well-levelled roads and inner apartments, all those marks, for which this city of mine will be celebrated on earth by the name of Dwāravati like unto Indra's Amarāvati [sic] (6-7). ... Let all of you take lands [vāstuni] for building houses; let gardens and crossings of four roads be laid out and let a survey of roads and walls be taken (9). Let artisans, expert in building houses and masons be sent round the country." Thus ... the Yādavas gladly selected sites for building their own houses ... engaged in measuring their own lands with ropes ...*

*Thereupon ... Govinda said to the masons:—"Do ye build for me a temple for my tutelary deity, well laid out with courtyards and roads" (10-14). ... the masons collected all the materials for building the fort and began to lay out the gate and the boundary line. Temples, in proper places, were built for Brahmā, the god of sacrifices, Indra, the presiding deities of fire and water and other gods. They then constructed the four gates of the temples (namely Shudrāksha, Aindra, Bhallāta and Pushpadantāka.) Thus when the houses of the high-souled Yādavas were constructed, Mādhava thought of laying out the city very soon.*

The key points to notice in the above passage are:

- No divination or geomancy was used to select the site, though in this case, Krishna himself may be attributed with the divinity of the selection;
- The professionals involved are referred to as *shilpi* (artisans/sculptors/architects/masons) and *karmakāra* (workers/labourers)
- Lands taken possession of by the Yādavas are referred to as *vāstu* (property)



d) The process of laying out a city, is known to be a popular enough process to have been referred to in a religious text, the sequence of which is given as:

1. City site selection
2. Benedictory rites
3. Citizens site selection and measurements
4. Marking of gardens and crossroads
5. Survey of roads and walls
6. Engagement of architects and workers for building homes
7. Tutelary deity temple building

The text next describes the engagement of the divine architect Vishvakarma by Krishna for developing his city further and the subsequent reclamation of coastlands for expanding the city due to the lands already marked being considered inadequate by the architect for the intended population (Dutt M. N., 2020 (1897)):

*Thereupon ... conducive to the well-being of the Yadavas and of the city, ... (He thought) that Prajāpati's son, the powerful Viswakarmā, the foremost of architects, would construct the city. ... the highly intelligent celestial architect, Viswakarma, ... came there and stood before Krishna. ... Hearing the humble words of Viswakarma, Keshava ... replied, ... "You are now to build a house for me here. O you of firm vows, do you build a city here for manifesting my own self and decorate it with houses befitting my power. You are an expert... Build for me such a city that it may be celebrated on earth like Amarāvati; ...". Thus accosted the intelligent Viswakarmā said to Krishna ... "... But thy city will not sufficiently accommodate such a number of men. ... if the ocean, of his own accord, gives a little more room then thy city may turn highly extensive." Krishna, ... said to the ocean, ... "... withdraw thy form in the water extending over twelve yojanas. If you give room, this city, abounding in wealth and enjoyments, will be able to afford accommodation to my huge army". ... the ocean, ... offered him his bed ... Thereupon Vishwakarmā said to Krishna, ... "O lord, I had already made a plan of this most excellent city in my mind. So in no time it will be decorated with the rows of houses. This charming city will be like the hump of the earth on account of its beautiful gateways, gates and upper-storied rooms".*

*Thereupon having constructed that city in the region liked by the gods he built the inner apartment [sic] of Krishna consisting of bathing houses. Thus by Viswakarma's mental effort that beautiful Vaishnava city, by name Dwarkāvatī, was built. That city was properly protected by doors, adorned with most excellent walls, girt by ditches, filled with palaces, beautiful men and women, traders and various articles of merchandise. ... It was adorned with pools, streamlets of pure water and with gardens. ... It had prosperous court-yards, high edifices stricken by clouds, many clear public roads and streets for carriages. ... That city was encircled by walls of sun-like and golden lustre, was filled with golden houses and gates like white clouds and was adorned with palaces. At some places the high roads were full of high palaces (54). ... Having laid out that city resembling that of the celestials and been honored by Govinda the Divine Architect repaired to the region of gods (56).*



Figure 2-12: Krishna and the Golden City of Dwarka; painted by Keshu Kalan and Miskina for Emperor Akbar (c. 1585 CE)  
Source: Freer Gallery of Art

Some key points to note here are:

- a) Reference to the city's architect as *shilpi* and the consideration of Vishvakarma as the *acharya* of *shilpis*
- b) Description of the city in line with the moat-encircled high-walled contemporary cities
- c) Reclamation of coastal land and the professional advice of an architect to an already initiated urban project showing importance of an architect for the city-planning process, in the 200 CE period, in Northwestern India.

The notable absences in both theory and praxis as understood from the above extracts are:

1. Non-use of Vāstupuruṣamandalā as a planning framework for laying out an urban settlement
2. Reference to architects, even for an urban-level project, as a *Shilpi*, as opposed to the later known terms such as *Sūtradhāra* or *Sthapati*
3. Similarity to process described in the Buddhist text *Milinda Panha* (composed around 200 CE) for the laying out of a city
4. Non-reference to popular urban planning practices such as the allocation of specific castes/classes to specific urban quarters, identification of specific urban quarters with specific divinities, reference to post-Vedic –era deities as opposed to Puranic-era deities etc.
5. The phrase “having constructed that city in the region liked by the gods”, does not refer to Vāstu in any adjoining lines; and can be taken as praise offered by the composer(s) to Krishna's choice of a site for the city, which was so great that the Gods worshipped it

These difference in both process and praxis imply that the earlier processes for laying out a city were different and not dependent on the Vāstusāstra frameworks, especially in the Northwest of India around 200 CE, as is evidenced by the similarity of the processes in the contemporaneous Buddhist text of the *Milinda Panha* (which was also composed in the Northwest of India) (Davids T. W., 1890a); this could imply the influence of contemporaneous Greco-Bactrian planning principles on Indian urban planning praxis. This observation obtains more strength when the reason for the founding of Dvārakā is investigated – the siege of Krishna's capital city of Mathura by the barbarian king Kālayavana (literally, black Greek/Ionian) with a force of 3 million soldiers; which lead to the abandoning of Mathura and the founding of Dvārakā by Krishna along with his subjects – mostly the families of the Yādava clan. In fact, multiple

texts such as the *Yuga-Purāṇa*, the *Gargi Samhitā*, *Patanjali's Mahābhāṣya* etc. contain references to the invasions and conquests of the Indo-Greeks, Parthians, Sakas etc. (of whom king Menander was an example) who took over significant stretches of the Indian sub-continent ranging from Afghanistan upto even Pātaliputra (in modern-day Bihar) (Firdos, Wenjie, & Sangyi, 2017).

#### 2.2.3.3.2. Pāñcarātra Ratnatraya

The earliest three texts of the early Pāñcarātra Āgama, in the order of Sātvata – Pauṣkara – Jayākhyā Samhitās are known as the Pāñcarātra Ratnatraya (Three Gems); with the Jayākhyā Samhita being dated to around 450 CE (Swamy, 2005), thus rendering the period for the three texts of the collection to somewhere between 200 CE and 500 CE (Apte & Supekar, 1983, p. 5). The texts describe the Ekāntidharma tradition (also known as Sātvata or Bhāgavatavidhi) which may have originated in the temple-oriented phase of Pāñcarātra worship in the CE period; an important feature of which was the '*catuḥsthāna-archana*' (four modes of installation and worship of God) wherein the modes accepted were: 1) bimba (idol/image), 2) kumbha (water pot), 3) mandala (mystic diagram), and 4) kunda (fire pit) (Apte P. P., 1991, pp. iii-vi).

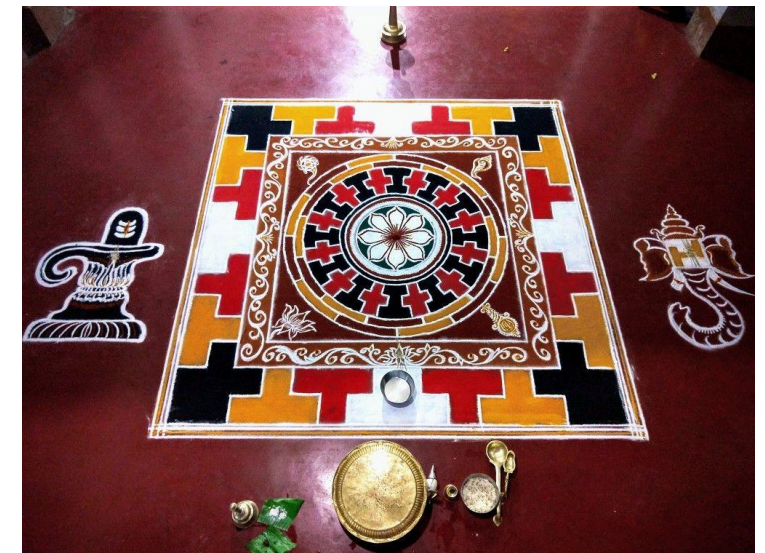


Figure 2-13: Chakrābja mandala drawn as part of puja

Source: RK Mandalas, 2019



Though mandala worship is described or mentioned in all the three texts, it is the most important subject of the ‘Pauśkara Samhita’ — which describes in great detail the technicalities of the construction of the mandalas to be drawn for the purpose of ‘Mandalārādhana’ (Mandala worship) – wherein the mandala served as the core ritual component for the initiation and progress of the spiritual aspirant seeking admission to the cult, with the final aim of delivering *siddhis* (spiritual powers) leading to *moksha* (liberation or freedom from rebirth) (Apte P. P., 1991) (Rastelli, 2007).

The texts can be thematically divided into four sections: Jnanapada (philosophy, metaphysics etc.), Yogapada (self-purification techniques), Kriyapada (guidelines on iconography, sculpture and architecture) and Caryapada (rituals, their results, scriptural bases for image worship etc.); these being indicative divisions since the texts compile this information in scattered formats (Swamy, 2005).

The Kriyapada section of the Pāñcarātrāgamas are possibly the earliest extant Indian texts that prescribe architectural and iconographic norms; albeit for the worship of the deity Vishnu in early temples of the Pāñcarātra sect alone (Swamy, 2005). Importantly, Swamy asserts that the texts state that the intricacies of iconography, sculpture and architecture are to be left to the sthapatis possessing knowledge of the Śilpaśāstra: “*Silpasāstra vidhanena kuryat*”; while the Śilpaśāstra texts themselves recommend that the ritual requirements are to be performed in consultation with the āgamas: “*Agamokta Vidhanena kuryat*”, which Swamy provides as evidence for the complementary character of these two textual traditions (Swamy, 2005). Yet, no early Vāstusāstra texts have been found, nor have extant texts been dated to this early period (before 450CE).



Figure 2-14: Four-headed god Vaikuntha chaturmukha, Kashmir, 9th century CE  
Source: Museum für Indische Kunst Dahlem via Gryffindor, 2006

### 2.2.3.3.3. Pauśkara Samhita

The Pauśkara Samhitā is the middle text in the chronology of the Pāñcarātra Ratnatraya texts, containing about 5900 slokas, divided into 43 chapters, composed as a dialogue between Pauśkara (god Brahma) and Bhagawan (god Vishnu) centering (in the first 26 chapters) on the technique of marshalling around 25 designs of mandalas along with their specific significances (Apte P. P., 1991).

The text mainly prescribes the norms for the worship of the deity Narayana through an initiatory form of Vaiṣṇavism that is dependent upon mandalas for both ritual and meditation. Interestingly the text also mentions worship of the Buddha as an emanation of the ‘*Lokaṇātha*’ form of Vishnu located in Magadha (in modern Bihar) (Swamy, 2005, p. 363 (vol. 2)).

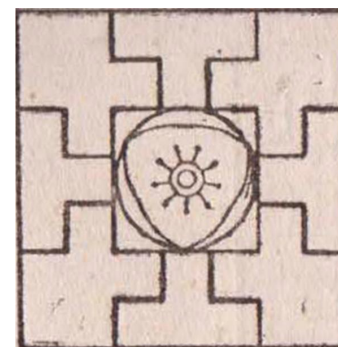


Figure 2-15: Sarvatobhadra mandala as described in the Pauśkara Samhita  
Source: Verse 151 – 177, Chapter 5, Pauśkarasaṃhitā, Apte, P.; 1991

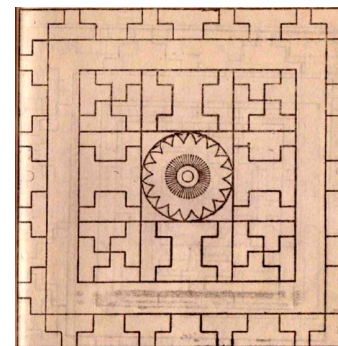


Figure 2-16: Svastika mandala as described in the Pauśkara Samhita  
Source: Apte, P. P.; 1991

**Table 2-4: Vāstumaṇḍalas described in the Pauśkara Samhita**  
**Source: Apte, P. P.; 1991**

Sl. No.	Name	Grid	Total units
1	Bhadraka or Sarvatobhadra	7 x 7	49
2	Aghanirmocana	8 x 8	64
3	Sadādhva	9 x 9	81
4	Dharmākhyā	10 x 10	100
5	Vasugarbha	11 x 11	121
6	Sarvakāmapradā	12 x 12	144
7	Amitrdghna	13 x 13	169
8	Āyusya	14 x 14	196
9	Balabhadra	15 x 15	225
10	Pauṣṭika	16 x 16	256
11	Ārogyaka	17 x 17	289
12	Viveka	18 x 18	324
13	Vāgiṣa	19 x 19	369
14	Mānasa	20 x 20	400
15	Jayākhyā	21 x 21	441
16	Svastika	22 x 22	484
17	Ananta	23 x 23	529
18	Nityākhyā	24 x 24	576
19	Bhūtāvasā	25 x 25	625
20	Amogha	26 x 26	676
21	Supraṭiṣṭha	27 x 27	729
22	Buddhyādhārā	28 x 28	784
23	Guṇākara	29 x 29	841
24	Dhruvākhyā or Dhruva	30 x 30	900
25	Paramānanda	31 x 31	961

The text also enjoins the “4 *Pratiṣṭhānas*” or the 4 endowments – ālaya (temple), brahma (priestly colony/settlement around the temple), vidyāpitha (a school for the Vedas within/near the temple premises) and phala-mula (providing agricultural accessories to temples, and providing water for the temple’s agricultural lands by building lakes and wells) (Krishnamachari, 2017). These norms are similar, but probably composed earlier in date, to those found in the Śaiva Āgamas such as the pre-900 CE Śaivasiddhāntika corpus of texts which require the Śaiva priests to consecrate and establish temples,

palaces, settlements, irrigational facilities etc. in the umland of temple-towns and monasteries (Sanderson, 2012).

A comparison between the Vāstumaṇḍala as enjoined by the Pauśkara Samhita and the Vāstupuruṣamaṇḍala as described in the later-dated Brihat Samhita has been delved into at length by Apte and Supekar, demonstrating the following understandings about the development of the concept of the maṇḍala for vāstu applications (Apte & Supekar, 1983):

1. The Vāstumaṇḍala framework as described in the Pauśkara Samhitā (before 450 CE) is taken to be chronologically earlier than the Brihat Samhitā (~550 CE) by at least one century
2. The diagrams/framework themselves demonstrate many differences between both texts; including name of deities, positions of deities, method of allocation of positions, method of partitioning of positions in corners and among multiple deities within a portion
3. The architectural significance of these diagrams is not stressed upon in the Pauśkara Samhita as in this text these diagrams are mainly used for the initiation, worship and obtaining of the grace of the god Vishnu through the means of the rituals associated with the mandalas; rather than their application to other ends such as allocation of architectural components of temples, houses etc. as indicated in the Brihat Samhita
4. The Vāstumaṇḍala as described in the Pauśkara Samhita does not accommodate astrological overtones as implied in later Vāstupuruṣamaṇḍalā; but demonstrates the influence of Hindu doctrines of cosmological and terrestrial elements such as rivers, deities associated with directions, constellations etc.
5. The Vāstupuruṣa, also described as the Vāstunātha in the Pauśkara Samhita, is not explicitly identified with the framework or arrangement of the mandala itself in the Pauśkara Samhita; but is rather identified as the divine personification of the consecrated site - *vāstukṣetra*, with the worship of the Vāstupuruṣa in the Pauśkara being enjoined since the mandala rituals will not otherwise yield the devotees with the desired *siddhis* or spiritual powers. This reasoning is different from that offered in the Brihat Samhita, based on the Puranic legends of Andhakasura, the demon who was subdued by god Brahma along with a host of other gods into the earth; thus forming the assembly of gods in specific locations in the Vāstupuruṣamaṇḍala upon the Vāstupuruṣa, the



demon who now requires oblations and sacrifices during all construction activities to remain subdued.

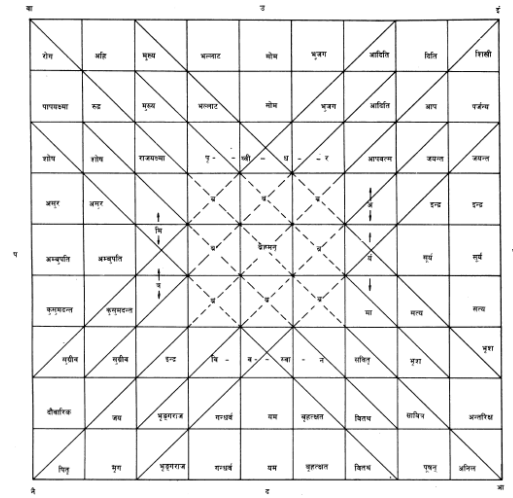


Figure 2-17: The 81-pada Vāstupuruṣamaṇḍala as described in the Brhat-Samhita  
Source: Apte and Supekar, 1983

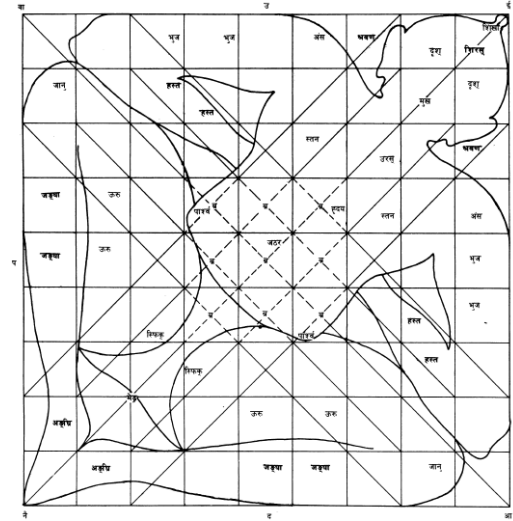


Figure 2-18: The Vāstupuruṣakṛti (creation of the 'man of the plan') within the 81-pada mandala as described in the Brhat-Samhita  
Source: Apte and Supekar, 1983

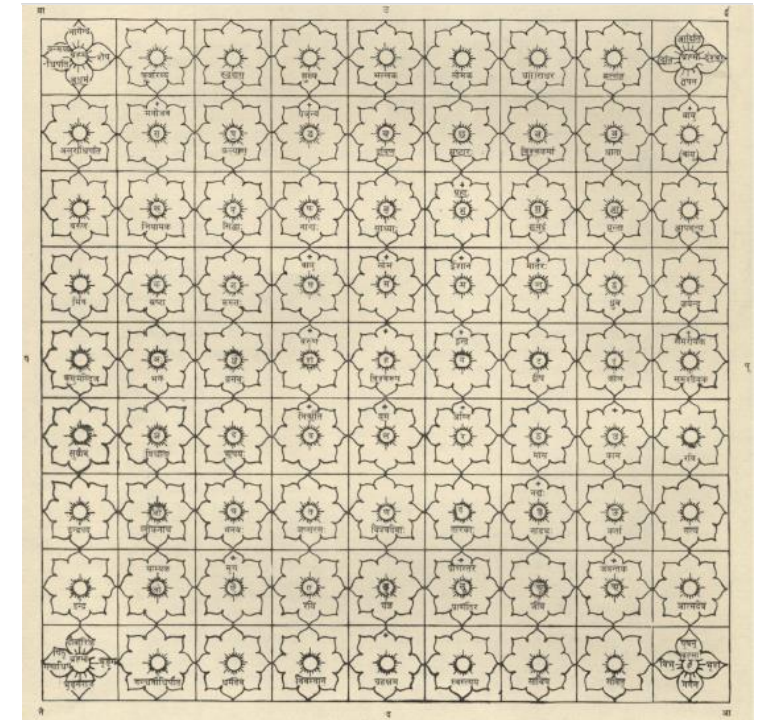


Figure 2-19: 81-pada vāstu mandala as described in the Pauṣkara Samhita  
Source: Apte and Supekar, 1983

Sanderson makes arguments for the theology, terminology as well as methodology of the mandalas discussed in the Pauṣkara Samhita as having been derived or adapted from the mandala frameworks of the Śaiva Mantramārga traditions; due to their similarities and anomalous (eg.: Śaiva concepts in Vaiṣṇava doctrines) ontology (Sanderson, 2009, pp. 66-70). This stands in contrast to Apte's claim that the Pauṣkara Samhita contains the earliest literary expositions of mandala-based worship (Apte P. P., 1991) (Apte & Supekar, 1983), which is supported by Swamy's assertion for the same for the entirety of the Pāñcarātra Ratnatraya corpus (Swamy, 2005).

#### 2.2.3.3.4. Hayaśiṛṣa Pāñcarātra

The Hayaśiṛṣa Pāñcarātra is a Sanskrit text from the ninth century A.D. (approximately) which was probably written for and by acharyas (priests) and primarily deals with rituals concerning the construction of a temple to the god Viṣṇu (Raddock, 2011). The text belongs to the Pāñcarātra tradition and incorporates many lost sources

(which are common to the Matsya Purāṇa and the Brihat Samhita as well) from the North Indian Vāstuśāstra traditions, and is understood to have been composed in Bengal or Orissa (Raddock, 2011). The text is understood to be a source for later works such as the Agni Purāṇa and the Hari Bhakta Vilāsa, and situates the temple at the center of the universe by means of the vāstupuruṣamaṇḍala (Raddock, 2011).

#### 2.2.3.4. **Post-Vedic Śaivism**

The worship of the deity known today as Shiva has been attributed to the pre-3000 BCE Indus valley cultures based on the identification of the seated horned deity found on the Harappan seals with the 'Pashupati' form of Shiva, which is currently unsupported due to the script not being deciphered as of yet (MoC-GoI, n.d.).



*Figure 2-20: Harappan seal of Pashupati or proto-Shiva, c.2500 BCE  
Source: National Museum, New Delhi*

Though the widespread worship of the deity Rudra is known from the Rigvedic texts, the organized sectarian worship of Shiva-Rudra is known through epigraphic and material records such as coins from the early CE period only (Bisschop, 2011). The early history of the sect is explored by Bhandarkar (Bhandarkar, 1913) and Flood (Flood, An Introduction to Hinduism, 1996) (Flood, 2003); while the most in-depth surveys of literature, epigraphy and praxis was by Sanderson (Sanderson, 1986) (Sanderson, 2009) (Sanderson, 2012) (Sanderson, 2019) whose central thesis on the dominant and pivotal position of Śaivism in the early medieval religious landscape of India as practically a state religion in states and kingdoms across India; to the extent of impacting the processes of state formation in Southeast Asia (Bisschop, Shaivism, 2011), is an important component

of this research's thesis on the development of the Vāstuśāstra literary traditions in early medieval India.

The rise of Śaivism in post-Vedic India underwent many developments which is traced through the research conducted by Sanderson and other associated researchers (Sanderson, The Saiva Age - The rise and dominance of Saivism in the Early Medieval Period, 2009), especially through critical analysis of seminal sectarian literature (Sanderson, 2012). The Tantric doctrines of mandalas and antinomian rituals in initiation-based cults that worship Shiva are explored by Sanderson (Sanderson, 2009), Brunner (Brunner, 2007), Goodall (Goodall, Parākhyatantram, 2009) etc. to elaborate on the influential theological frameworks and ritual practices in these sects which later came to be incorporated in Vaiṣṇavism, Buddhism and even Jainism (Sanderson, 2012).



*Figure 2-21: Sculpture of five-headed god Sadashiva, West Bengal, 1050 CE- 1150 CE  
Source: Los Angeles County Museum of Art*



Figure 2-22: Svachchanda Bhairava, the supreme being of Dakshina Shaivism  
Source: Walters Art Museum, 2002

#### 2.2.3.4.1. Mantramārga Śaivism and Śaiva Siddhānta

The rise of specific emanation-based cults of Shiva across India was paralleled by the creation of many texts describing the doctrines, rituals and iconography associated with the particular deities. The god known as Śadāśiva was one such deity who was the focus of many Śaiva Tantra texts deriving from the earliest exemplars of the post-450 CE Nīśvāsa corpus located to the Gujarat region (Fisher, 2017, p. 207). Another important deity was Svachchanda Bhairava of the later sects of Mantramārga (across India) and Śaiva Siddhānta (particularly in South India) which laid an increased emphasis on elaborate public rituals as contrasted with the older initiation-based (usually antinomian) traditions of Atimārga (~200 CE – 450 CE) and Pāśupata (~pre-200 CE) (Sanderson, 2019). This period also saw inclusivist tendencies in Śaivism (Bisschop, *Inclusivism revisited: The worship of other gods in the Śivadharmasāstra, the Skandapurāṇa, and the Nīśvāsamukha*, 2019) and the assimilation of popular non-Śaiva festivals into Śaiva ritual contexts (Goodall, *Damanotsava: On love in spring, on what Jñānaśambhu wrote, and on the spread of public festivals into the Mantramārga*, 2019). The earliest known inscription for the rise of the Śaiva traditions in South India is a self-attestation by the Pallava king Rajasimha I (reigned: 690-715 CE), which contains the earliest known use of the phrase ‘Śaiva Siddhānta – Mārge’ in South India (Pillai, 2016). Sanderson identifies the dominance of Śaivism in the early medieval period in India, and in South India in

particular, as being associated with the Śaiva Siddhānta’s development of a body of rituals and theory that legitimated or promoted the key social, political and economic processes of early medieval India (Sanderson, 2009, p. 253):

1. *the spread of the monarchical model of government through the emergence of numerous new dynasties at subregional, regional, and supraregional levels;*
2. *the multiplication of land-owning temples, both royal temples in nuclear areas and lesser temples in peripheral zones, often established by subordinate local lords, thus promoting the rural economy and the progressive penetration of the authority of the centre into new territories;*
3. *the proliferation of new urban centres, both commercial centres that grew from below through a process of agglomeration, and planned settlements, growths from above, founded by rulers;*
4. *the expansion of the agrarian base through the creation of villages, land reclamation, and the construction of water-reservoirs, wells, and other means of irrigation, with the steady growth in population that these developments imply; and*
5. *the cultural and religious assimilation of the growing population of communities caught up in this expansion.*

The especial involvement of the Mantramārga Śaiva cults in the establishment and consecration of public-civic construction such as that for palaces, monasteries, irrigation-works, tanks is corroborated by Sanderson through a study of the epigraphic evidence referring to these sects across India from Kashmir to Tamil Nadu (Sanderson, 2009) (Sanderson, 2019).

#### 2.2.3.4.2. The Pratiṣṭhāntaras

The early medieval rulers (within the Indian subcontinent as well as in Southeast Asia) attempted to legitimate and consolidate their position by building grand temples where the images of their chosen deity (usually Shiva in the form of a *linga*) were installed (sometimes named after themselves, a practice termed *svanāmnā*), and endowed with land and officiants to aid and propagate the cult (Sanderson, 2009). The Mantramārga Śaiva cults had specific rituals and trained officiants who were to establish these institutions; the details of which were developed into a body of secondary scriptures, known as the Pratiṣṭhāntaras, which were devoted exclusively to prescriptions on the design and consecration of temples, monasteries, images, royal palaces, and new settlements (Sanderson, 2009, p. 274).

The Mantramārga canon considers 21 Pratiṣṭhāntara texts to have been taught by god Śiva himself; to guide the priests (*Śaiva-sthāpaka*) and officiants (*śilpācārya*), as well as the architect (*sthapati*) and patron(s) with the appropriate rituals and procedures for site selection, idol-making, installation, temple architecture, royal rituals etc. (Sanderson, 2012).



**Table 2-5: The Mantramārga Pratiṣṭhāntara corpus**  
**Source: Sanderson, 2014**

Sl. No.	Name	Alternate name
1	Pratiṣṭhākalpa	
2	Kaumāra	Skandamata
3	Kiraṇa	
4	Piṅgalāmata	
5	Devyāmata	
6	Mayamata	Mayasamgraha
7	Nandi[mata]	Nandikeśvaramata?
8	Pratiṣṭhāpārameśvara	
9	Bhāskara[mata]	
10	Liṅgakalpa	
11	Vidyāpurāṇa	
12	Vāthula	
13	Śakra[mata]	
14	Vāmadeva	
15	Paitāmaha 1	
16	Paitāmaha 2	
17	Bāṇa[mata]	
18	Gargamata	
19	Yāmya	
20	Hamsa	
21	Viśvakarmamata	

Published research is currently available on the contents of three of these scriptures, the Devyāmata, the Mohacūrottara and the Piṅgalāmata (Mills, Temple Design in Six Early Śaiva Scriptures. Critical Edition and Translation of the prāsādalakṣaṇa-portions of the Brhatkālottara, Devyāmata, Kiraṇa, Mohacūrottara, Mayasamgraha & Piṅgalāmata, 2019). The Piṅgalāmata considers itself as the Pratiṣṭhāntara belonging to the Nīsvāsatāntara corpus with citations of the text occurring by the tenth century CE in Kashmiri Śaiva exegetical commentaries (Sanderson, 2012) (Mills, Temple Design in Six Early Śaiva Scriptures. Critical Edition and Translation of the prāsādalakṣaṇa-portions of the Brhatkālottara, Devyāmata, Kiraṇa, Mohacūrottara, Mayasamgraha & Piṅgalāmata, 2019, p. 66). An incomplete manuscript of the Mayasamgraha/Mayamata (clarified by Sanderson to be different from the Vāstuśāstra text composed later in Tamil Nadu under the same name) was found with a complete commentary called the Bhāvacūḍāmaṇi (c.

950-1050 CE); the contents of which were translated and analysed by Mills with respect to prescriptions for temple architecture (Mills, Temple Design in Six Early Śaiva Scriptures. Critical Edition and Translation of the prāsādalakṣaṇa-portions of the Brhatkālottara, Devyāmata, Kiraṇa, Mohacūrottara, Mayasamgraha & Piṅgalāmata, 2019).

The texts also define the popular terminology of the later Vāstuśāstra texts thus (Mills, Temple Design in Six Early Śaiva Scriptures. Critical Edition and Translation of the prāsādalakṣaṇa-portions of the Brhatkālottara, Devyāmata, Kiraṇa, Mohacūrottara, Mayasamgraha & Piṅgalāmata, 2019):

*Vāstu*

*The kṣetra construction area is termed the vāstu when it is treated as a domain ritually inhabited by a vāstupuruṣa and the deities of the vāstu*  
*Vāstuyāga*

*the ritual of the building plan*

*Vāstunara/ vāstupuruṣa / vāstudeha / vāstuśarīra*

*the man of the building plan*  
*kṣetra*

*the area of ground marked out by sūtra lines as the site for the construction*

Interestingly, the term *mandala* in the Pratiṣṭhāntaras refers to ‘kingdom’ rather than the arrangement of the deities on the grid diagram (which is referred to as only *Vāstu* in these texts) (Mills, Temple Design in Six Early Śaiva Scriptures. Critical Edition and Translation of the prāsādalakṣaṇa-portions of the Brhatkālottara, Devyāmata, Kiraṇa, Mohacūrottara, Mayasamgraha & Piṅgalāmata, 2019); indicating the difference in the approach of these texts as compared to the etymology derived for the diagrams in the Brhat Samhita, the Matsya Purāṇa etc. (Dikshitar, 1935) (Apte & Supekar, 1983), wherein it is referred to as the Vāstupuruṣamaṇḍala (which could be taken to indicate the inseparability of the concepts of vāstu (site), puruṣa (the personification of the site) and the mandala (the diagrammatic arrangement of deities upon the site) in the ontology followed by these texts). This disagreement is further enriched by the term Vāstumaṇḍala which is used for these diagrams by the arguably earliest text on mandalas – the Pauśkara Samhita. This is independent of the observation that the arrangement of deities in all these diagrams do not always coincide in method, names or numbers (Apte & Supekar, 1983).

The Pratiṣṭhāntaras are also the earliest extant texts to prescribe the laying out of various settlements according to Vāstuśāstra frameworks (primarily the vāstu diagrams).

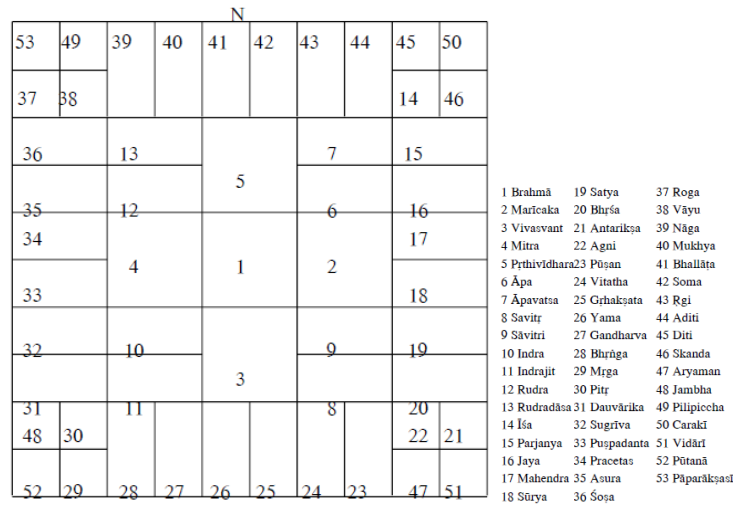


Figure 2-23: 10x10 vāstu for a city (nagara) as described in the Piṅgalāmata  
 Note: The same vāstu diagram is applicable for a 100 x 100 vāstu for a kingdom (maṇḍala) in the Piṅgalāmata  
 Source: Mills, 2019

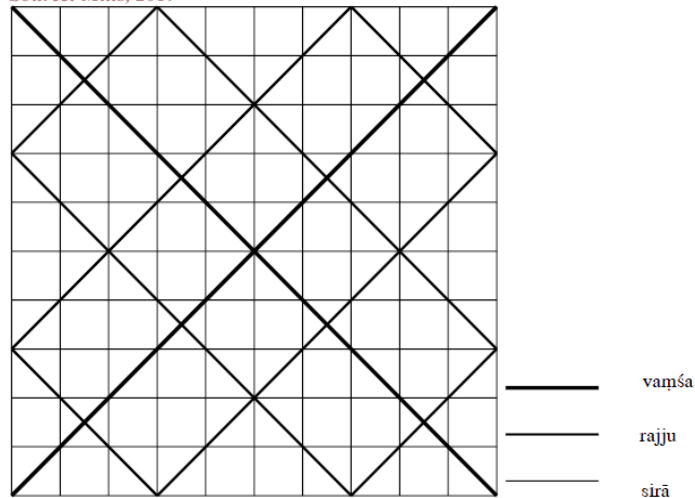


Figure 2-24: Arrangement of vāṃśas, rajjus and sirās in a 100x100 vāstu as described in the Piṅgalāmata  
 Note: Each square represents 10x10 sub-units (padas) when applied for a 100 x 100 vāstu for a kingdom  
 Source: Mills, 2019

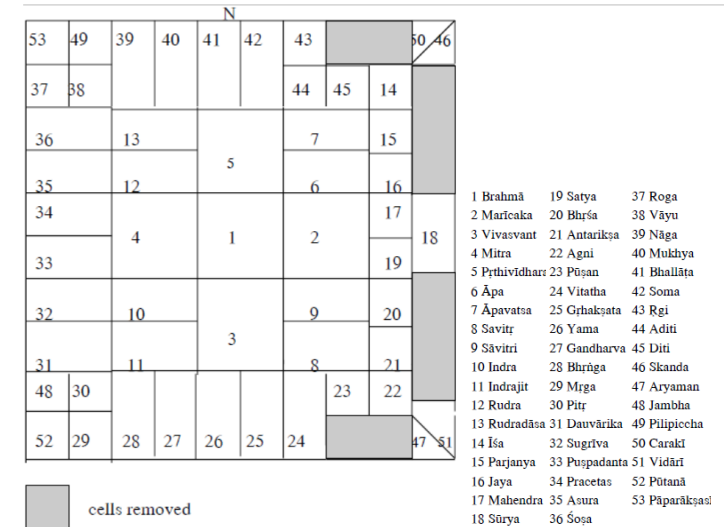


Figure 2-25: 10x10 vāstu for a fortress with a watchtower (koṭṭāṭṭalakasaṃyuta) as described in the Piṅgalāmata  
 Source: Mills, 2019

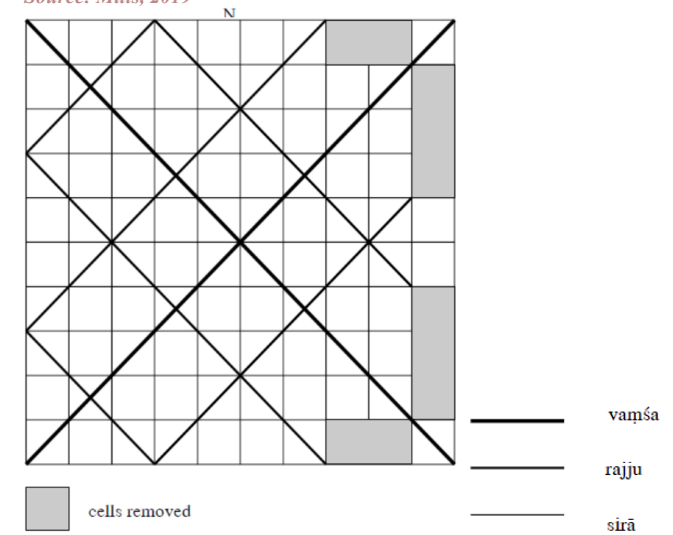


Figure 2-26: Arrangement of vāṃśas, rajjus and sirās in the 10x10 vāstu for a fortress with a watchtower as described in the Piṅgalāmata  
 Source: Mills, 2019



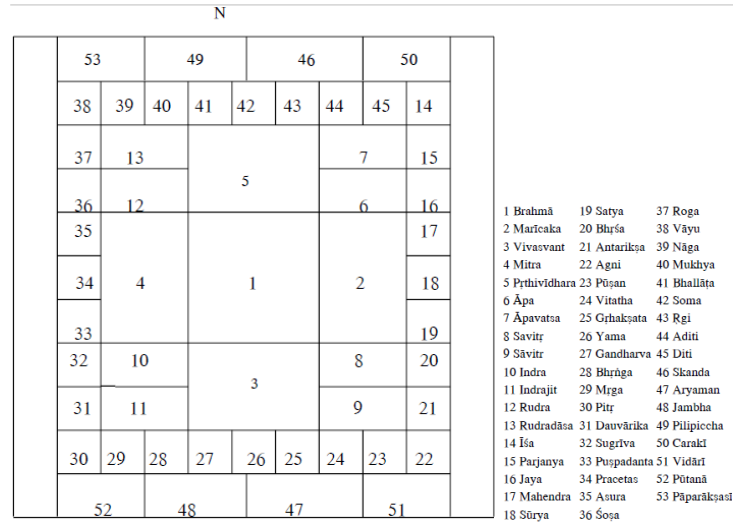


Figure 2-27: The 11x11 vāstu for a village (grāma) as described in the Piṅgalāmata  
Source: Mills, 2019

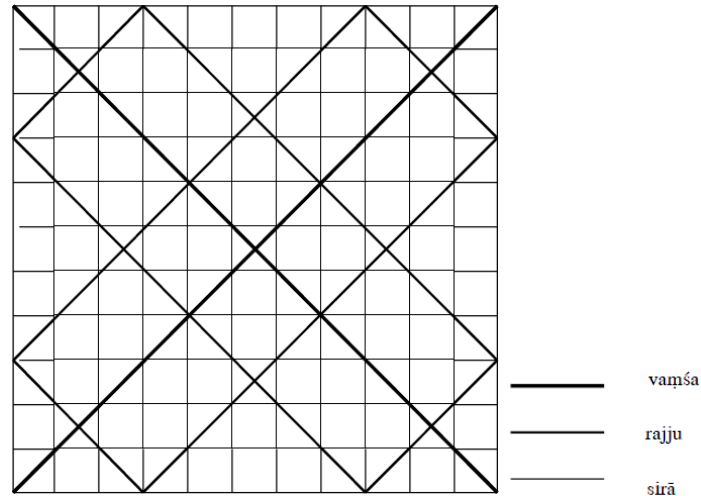


Figure 2-28: The vāṃśas, rajjus and sirās in the 11x11 vāstu for a village (grāma) as described in the Piṅgalāmata  
Source: Mills, 2019

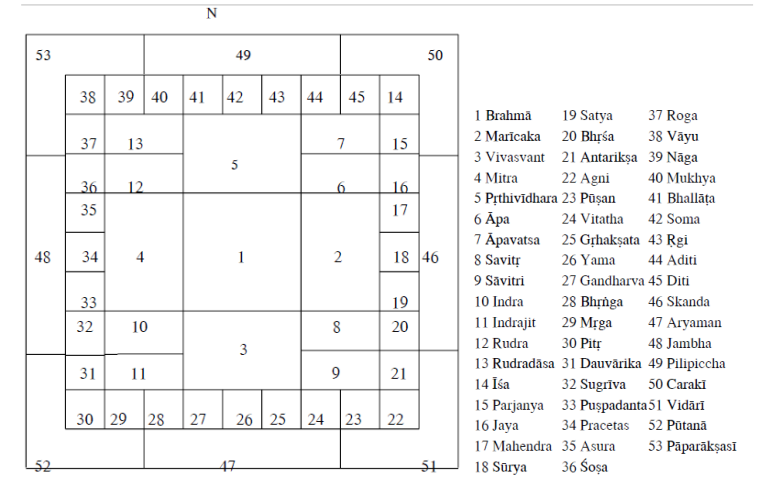


Figure 2-29: The 11x11 vāstu for a hamlet (kheṭa(ka)) as described in the Piṅgalāmata  
Source: Mills, 2019

The activities and responsibilities of a powerful Śaiva Saiddhāntika priest who was accepted as the chaplain/preceptor of a ruling king would include the following works, the evidence for which is present in both inscriptions and literature ranging from 600 CE-1200 CE located at various places from Kashmir to Tamil Nadu (Sanderson, 2009):

1. Consecration and coronation of the king, the heir-apparent etc. through elaborate public rituals
2. Public ceremonies and rituals for the subjects of a kingdom
3. Rituals to ensure the victory of his king and armies in battle
4. Establishing and engaging 'brāhmadeya' through Śaiva frameworks
5. Consecration of sites through the rituals known as 'vāstuyāga'
6. Creation and consecration of:
  - a. Temples
  - b. Monasteries
  - c. Settlements (hamlets, villages, towns etc.)
  - d. Water tanks
  - e. Irrigation facilities

Thus, the Śaiva Saiddhāntika priest, especially in the role of royal chaplain or rājaguru; was empowered with regnal, civic and martial duties which he performed in accordance with the norms as elaborated in the various authoritative Pratiṣṭhāntras and Pratiṣṭhāpaddhatis (Sanderson, 2009). These texts also specified the method for the

creation and consecration of palaces, provinces and kingdoms; though the inscriptional evidence of their application is not conclusively positive.

These texts are also evidence for one of the earliest renderings of the term *sthapati* as architect while the chief-officiant who is learned in installation-consecration rituals is termed as the *guru / ācārya / sthāpaka / deśika / mantrin* (Mills, Temple Design in Six Early Śaiva Scriptures. Critical Edition and Translation of the prāsādalakṣaṇa-portions of the Brhatkālotara, Devyāmata, Kiraṇa, Mohacūrottara, Mayasaṃgraha & Piṅgalāmata, 2019). The texts also define the artisan as *śilpin*. In contrast, the term *śutradhāra* was used in literature from central India upto about 1000 CE to refer to architects (Sharma S. K., 2008) (Hardy, Drāvida Temples in the Samarāṅgasūtradhāra, 2009) (Salvini, 2012).

The Āgamas are set of texts composed in South India, which primarily deal with the worship of Shiva and Shakti; but also deal with technical matters of a wide variety including architecture, sculpture and town planning (Acharya P. K., 1934, p. 24). The Kamikagama, Karanagama and the Suprabhedagama describe town planning and village planning in particular in a detailed manner (Acharya P. K., 1933).

#### 2.2.3.4.3. Paddhati Literature

Paddhati texts were written as secondary scriptures that sought to provide detailed exposition as to the contents and performance of Saiddhāntika rituals, and usually made reference to some primary agama or tantra of the Saiddhāntika corpus for its source material (Sanderson, 2012). Pratiṣṭhāpaddhati literature was written for similar purposes, but restricted themselves to systematic coverage of installation rituals alone. The Bhojadeva (c. 1010CE – 1055 CE) of the Paramara dynasty based in the Mālava region of modern Madhya Pradesh is attributed the authorship of an influential and scholarly Śaiva Saiddhāntika paddhati text called the Siddhāntasārapaddhati, which provided a concise exposition of the Śaiva Saiddhāntika doctrines and prescriptions, many of which could be traced to the influential Mantrapitha Śaiva Tantra text known as the *Lalitasvacchanda* or the *Svacchanda* which was dedicated to the cult worship of the deities *Svacchandabhairava-Aghoreśvarī* (Sanderson, 2012). The transfer of both the original works and their exegetical commentaries from Kashmir through the Malava region towards Tamil Nadu may be gleaned from the discovery of an exegetical commentary by Aghoraśiva of Cidambaram (an early medieval temple town in Tamil Nadu) on another Śaiva Saiddhāntika text attributed to Bhojadeva – the *Tattvaparakāśa* (Sanderson, 2012). This Southward migration (from regions near Kashmir to Tamil Nadu) of the texts along with the development of Mantramārga Śaivism into the distinctly

South Indian tradition of Śaiva Siddhānta can be traced by literary, epigraphic and architectural evidences (Sanderson, 2009) (Sanderson, 2012).

#### 2.2.3.4.4. The Tiruvarur Matha in Tamil Nadu

The Golaki- Matha based in Gurgi (in modern day Madhya Pradesh) was an influential monastery that developed both the theology and theologians of Śaiva Siddhānta (Folk, 2013), and became widespread throughout the country with branches in Bhopal (the region of Bhojaraja), Guntur and other places in today's Andhra Pradesh (Hiralal, 1928), and at Tiruparankōṇram, Devakipuram etc. in modern day Tamil Nadu (Hiralal, 1928). Sanderson presents the c. 1058 CE work of Rāmanātha which states that the Saiddhāntika monastery at Tiruvārūr (also known as Kamalāpurī or Kamalālaya) in the Tañjāvūr district, was also known as 'the Southern Golaḡimāṭha' since it was established by a Saiddhāntika missionary from the original northern Golaḡimāṭha (Sanderson, 2012, p. 21). The Tiruvārūr monastery is known for being the place of composition for newer Saiddhāntika exegetical texts as well, such as the c. 1058 CE paddhati text called Natarājapaddhati by Rāmanātha (Sanderson, 2012, p. 21).

Tiruvārūr was one of the strongholds of Jainism in Tamil Nadu in the post-700 CE period, when the Nāyaṇmār saints (who were evangelical saints following the Śaiva path as per the Bhakti tradition) began intense and aggressive campaigns to turn the lands of Tamil Nadu towards Śaivism (Ghose R. , 1998, pp. 289-290). The temple town of Tiruvārūr was one of the sites of confrontation in this period and continued to be a site of importance for Jainas until the waning of the dominance of Jainism in Tamil Nadu (Ghose R. , 1998). The co-location at Tiruvārūr of the earlier Jaina centres with the later Śaiva Saiddhāntika monastery is the background for the positing of the Tiruvārūr monastery as being the site of Jaina iconography based interpolations on norms of Vāstuśāstra in the later South Indian texts which were influenced by the Śaiva Saiddhāntika Pratiṣṭhānta traditions – such as the Mānasāra, Mayamata, Kāmikāgama, Suprabhedāgama etc.

#### 2.2.3.4.5. South Indian Recensions

The South Indian tradition (post-1000 CE) of Śaiva Siddhānta saw the recension of many canonical Śaivāgamas such as the Aṃśumat, Ajita, Kāmika etc. into regional versions that reflected the concerns regarding the distinct modes of worship developed in Tamil Nadu and asserting the social privileges of the local priesthood (sometimes extending beyond to include the rights and privileges of Gauḍa teachers (such as the ascetic Brahmaśiva who established the Tiruvārūr monastery)); which changed the texts so that they did not retain similarities to the texts as preserved in the Kashmiri and Nepali manuscripts of the same Āgamas (Sanderson, 2012, p. 89).

The Somaśambhupaddhati, post-1000 CE paddhati text authored by a Goḷaki affiliate is another example of the literary output of the Goḷaki monastery, whose Lakṣādhya or Bhikṣā maṭam lineage was the most common Goḷaki School in the Chola period and was found mentioned in inscriptions throughout the Tamil region (Folk, 2013). This tradition, (which developed into the later Dakshina Shaivism sect of Śaiva Siddhānta, was in regular scholarly correspondence with the Northern Indian texts of both the Pratiṣṭhānta variety and the Paddhati variety, as is seen by the mentions of the commentary on the Mohaśūrottara (a pre-900 CE Śaiva Pratiṣṭhānta) by Aghoraśiva of Cidambaram, who also composed a commentary on the c.1050 CE Siddhāntasārapaddhati attributed to Bhojarāja of the Paramāra dynasty (Sanderson, 2012, p. 16).

## 2.2.4. Buddhist Religious Literature

Buddhist literature or Pāli literature (since the majority of Buddhist literature was written in Pāli, eventually becoming the liturgical language of Buddhism) is a rich source of information about the cities and towns and villages of early Buddhism-era India (around 500-300 BC) and was explored by scholars such as Ray (Ray A. , 1957), Davids (Davids R. T., 1911), and Ghose (Ghose B. , 1949) to illustrate the urbanism of mainland North-Eastern India.

The education of a Buddhist may have provided a much more open and less ritualised education than the Brahmanic teachings ( if the Chinese traveller Hsuan Tsang's descriptions of the education of an urban middle class Buddhist youth is examined - as consisting of the 'five vidyas' or five branches of knowledge which Omvedt asserts "included *shilpasthanavidya* (arts, mechanics, knowledge of the calendar, architecture, engineering) along with *sabdavidya* (grammar), *cikitsavidya* (medicine), *hetuvidya* (ethics and philosophy) and *adhyatmavidya* (religion)" (Omvedt, 2003).

Buddhist Pali literature mentions vātthuvijjā often and with reference to the geomantic-divinatory practices associated with it than as a subject allied to architecture or sculpture; with the following texts offered by Otter as containing mentions of the same: Dīghanikāya I.9, Dīghanikāya-Atthakathā 1.93, Saṃyuttanikāya III.239, Mahāniddeśa 372, Visuddhimagga 269, Khuddakapāṭha-Atthakathā 237 (Otter, 2016).

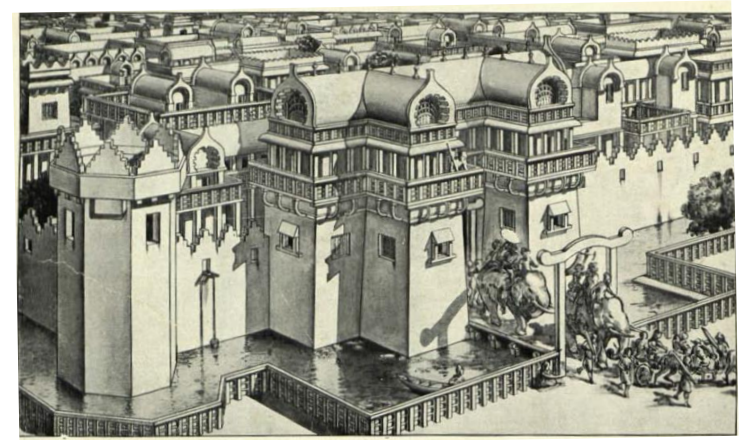


Figure 2-30: Conjectural reconstruction of the main gateway to the city of Kushinagara in Magadha (Bihar)

Adapted from a bas-relief on the Southern gateway of the Sanchi stupa

Source: Brown, 1959

#### 2.2.4.1. Historical Urbanism in the Buddha's time

The rise of Buddhism in India is associated with the rise of many new phenomenae, such as newer types of urban formations, of which Gokhale identifies fourtypes (Gokhale, 1982):

- 1) commercial towns based on an extensive exchange of commodities (Sāvatti)
- 2) bureaucratic towns, with their major activity being related to administrative functions (Rājagaha)
- 3) tribal towns, being mainly confederate centers of tribal oligarchies and their clan subdivisions (Kapilavattu)
- 4) transportation centers, based on routes of portage (Ujjeni)

Gokhale's statistical analysis of the number of references to settlements in the Buddhist canon (the texts of the Vinaya Pitaka (excluding the Mahavagga and the Cullavagga), the Digha and the Majjhima Nikayas, the Udāna, the Dhammapada and the Thera and the Theri Gāthas) provides the following two insights about the urban character of early Buddhism (Gokhale B. G., 1982, pp. 10-11):

- 1) 35 cities and towns, 8 market-places, 45 villages and 3 countryside locations can be identified in the selected Buddhist texts
- 2) The numbers of unique villages mentioned are more numerous than the numbers of unique cities and towns, but the frequency of references to towns outnumber villages

#### 2.2.4.2. Villages in Pali Literature

. Interestingly, both the Jaina and Buddhist texts do not demonstrate any strong biases towards towns over villages; and describe them in comparably similar terms (Davids R. T., 1911). Ghosh notes that even with the four places that were associated with the key events in Buddha's life (Lumbini – birth, Bodh-Gaya – enlightenment, Sarnath – seminal preaching, Kushinagara – death); only Kushinagara was a contemporary town, the rest being villages at that time (Ghosh A. , The City in Early Historical India, 1973, p. 58). These villages were of greater importance to pilgrims than the contemporary cities which were secondary pilgrimage spots – Vasihali, Rajagriha, Shankasya, Shravashti (Ghosh A. , The City in Early Historical India, 1973, p. 58). Bhattacharya describes a statement attributed to Buddha wherein the permission to build structures with stone is granted by the Buddha; indicating the prevalence of wood architecture during the 4th – 6th century BC (Bhattacharya T. , 2006, p. 302). This is quite surprising given the extensive familiarity with stone displayed in the architectural and town planning treatises. Ghosh, and Singh, note that the towns and cities described in the Buddhist and Jaina texts

would barely qualify for either category as per contemporary definitions (Ghosh A. , The City in Early Historical India, 1973) (Singh U. , 2008).

Davids describes that rural houses were rarely isolated and usually grouped together with narrow lanes in between (Davids R. T., 1911). Ray notes that the literature mentions the number of houses in a village varying from 2-3 houses to indefinite numbers. The references to the number of households vary from 150 to 1000 families; with mentions of 30 family villages and 5000 family villages also being observed (Ray A. , Villages, Towns and Secular Buildings in Ancient India, 1964).

The components of a village could be described as the following (Davids R. T., 1911):

1. Village proper, consisting of residential settlements
2. Mote halls (meeting halls), rest houses etc.
3. Common pasture and grazing lands
4. Cultivated fields (usually rice), with irrigation channels supervised by headmen
5. Common jungle land (for waste, wood etc.) adjoined by proper jungles (aranya)
6. Sacred grove(s), parks etc.
7. Reservoirs / tanks

The Buddhist canon describes the rural regions as being fairly developed and self-sufficient with a network of villages, and a few big towns that usually held economic/political power (Davids R. T., 1911). Ray has enlisted the types of villages described in the Pali canon (Ray A. , Villages, Towns and Secular Buildings in Ancient India, 1964) as:

- 1) Gāmaka: small village/hamlet
- 2) Gāma: ordinary village
- 3) Nigama-gāma: villages that changed in size and character to become towns (may host merchant/trade guilds)
- 4) Dvaara-gāma: a village near the gate of a city or large town (may be considered as a suburb)
- 5) Pachchanta-gāma: frontier village (at the borders of a region)

Ghose and Ray have observed the following types of villages described in Pāli literature, classified on the basis of the castes/occupations of its residents (Ghose B. , 1949) (Ray A. , 1957):

- 1) Kevaṭṭa-gāma (Fishermen's village)

- 2) Kammāra-gāma (Smiths' village)
- 3) Nesāda-gāma (Hunters' village)
- 4) Vaddhaki-gāma (carpenters' village)
- 5) Nalakāra-gāma (basket-makers' village)
- 6) Villages of Brāhmins
- 7) Villages of Candālas

The village hall appears to be an important spatial element in rural settlements with varied functions (Ray A. , Villages, Towns and Secular Buildings in Ancient India, 1964):

- 1) Public hall for gatherings
- 2) Inn/resting place for travellers
- 3) Shelter for the stranded
- 4) Centre for recreation of villagers
- 5) Discussion space for religious and community affairs
- 6) Venue for collective charity of the village

### 2.2.4.3. Pāṭaligāmaṃpanaṃ - Mahāparinibbānasutta

This *Sutta* (considered as one of the oldest texts in the Buddhist canon despite some later interpolations), describes mainly the sayings and events from the final year of the Buddha's life, within which is the section named *Pāṭaligāmaṃpanaṃ* which literally means 'Measuring (to lay out) Pāṭali (the village of)' (Bhikkhu S. , 2018) or 'Building Up Pataligama' (Bhikkhu Ā. , 2008). This chapter describes the establishment of a fortified settlement at the (then) small village of Pāṭaligāma by the Magadhan chief ministers Sunīdha and Vassakāra. The Buddha has been described as appreciating the choice of site for the fort by the two ministers with the following words (Bhikkhu Ā. , 2008):

*"It is just as though ... [they are building] after consulting with the Tāvatisa Divinities ... a great many Divinities, thousands upon thousands, were taking possession of grounds at Pāṭaligāma. In that place where the great Divinities took possession of grounds, there the powerful rulers and great royal ministers' minds inclined to building up residences."*

These lines are one of the earliest literary attributions of the beliefs of Vāstuvidyā in Indian literature, specifically the belief that the occupation of the building site (referred to as *vatthū* in Pāli) by divinities/ deities sanctifies and qualifies the site, especially since these lines are attributed to the Buddha himself. Ānandajoti Bhikkhu translates the following lines (attributed to the Buddha) describing the reasoning for and hierarchy of the merit of sites selected for building, thus (Bhikkhu Ā. , 2008):

*"In that place where the great Divinities took possession of grounds, there the powerful rulers and great royal ministers' minds inclined to building up residences.  
In that place where the middling Divinities took possession of grounds, there the middling rulers and middling royal ministers' minds inclined to building up residences.  
In that place where the lower Divinities took possession of grounds, there the lower rulers and lower royal ministers' minds inclined to building up residences."*

This is the earliest known reference in literature for the association of superhuman entities with specific sites and the resultant auspicious nature of the site. These words, attributed to the Buddha himself, seem to clash with the Buddha's apparently staunch disapproval of Buddhist monks who practiced any form of astrology, divination or geomancy as part of their means of livelihood or service. Though, this and other such quotations need not indicate a Buddhist base for the origin of the Vāstumāṇḍala, early Buddhist literature contains many seemingly contemporaneous descriptions of the practice of Vāstuvidyā in the built traditions of its age.



#### 2.2.4.4. Brahmaj āla Sutta

The first Sutta discusses two main topics: the elaboration of the Ten Precepts (Cula-sila), and the Middle Precepts (Majjhima-sila); and the Great Precepts (Maha-sila); the purposes of which have to define the right conduct and activities of an ideal Buddhist ascetic or monk (Davids & Carpenter, 1890). The Sutta also lists the many wrong livelihoods and services that the Buddha asks the monks to not participate in, including the following which are relevant to Vāstuvidyā (Davids & Carpenter, 1890):

1. Vātthu-vijjā: Determining whether the site (for a proposed house, pleasure etc.) is lucky or not
2. Vātthu-kammaṃ: Fixing on lucky sites for dwelling
3. Vātthu-parikiraṇaṃ: Consecrating sites
4. Bhūri-vijjā: Knowledge of the charms to be used when lodging in an earth house
5. Bhūri-kammaṃ: Repeating charms while lodging in an earth house (popularly recognized as asking “Is this a place sacred to Mother Earth?”)

#### 2.2.4.5. Suruci-jātaka (489)

The Jātaka purports to describe the process of the building of a palace-tower for a young prince, during the course of which the king asks first for the services of a “vāthuvijjāchāriya” who was reputed to have the following skills (Fausboll, 1887, p. 314):

“... The king sent for those [vāthuvijjāchāriya] who had skill in divining the lucky place for a building ...”

This is followed by the services of a carpenter-mason “vaddhaki” (the role of whom is rendered as ‘master-mason’ by Fausboll) who was responsible for the building of this palace structure (Fausboll, 1887, p. 314):

“... get a master-mason, and build me a palace ...”

The construction of this structure is followed by its consecration “pāsādamangalam”, for the purposes of which neither the diviner nor the head-mason were specifically recalled:

“... the ceremony for consecrating the palace [pāsādamangalam]...”

This last event is significant since it has a parallel with the Arthaśāstra’s prescriptions where the roles of a diviner-geomancer (vāstuka), an astrologer (daivajñā) and a carpenter-mason (vaddhaki) are all indicated to be necessary during the initiation of construction but presented as being distinctly distinct from each other (Kangle, 1963).

#### 2.2.4.6. Gāmaṇi-caṇḍa-jātaka

This Jātaka is important to discussions on Vāstuvidyā since it offers at three instances three distinct but related descriptions of the method and role of a “vāthuvijjāchāriya” (Fausboll & Davids, 1879, p. 297):

“... [this vāthuvijjāchāriya is] a man who is skilled in the lore [vāthuvijjā] which tells what are good sites for a building...”

“... this man was one who divined by magic as to desirable sites ...”

“... Down in the earth as deep as seven cubits he can see a fault. By his help there was a place chosen for the king's house; ...”

The Jātaka illustrates the early genesis (before 300 CE) of the “shalya” concept which dominates the pre-1000 CE Vāstu texts, through its descriptions of the underground faults in the site that the vāthuvijjāchāriya divines and describes. The divinatory selection of sites is demonstrated to be the chief purpose of the expert of vāthuvijjā; with his services (as described in the other Jātakas) being called for by royalty.

#### 2.2.4.7. Mahā-ummagga-jātaka (546)

The 546<sup>th</sup> Jātaka is a story which purports to describe, incidentally yet in depth, the architectural knowledge presumably at the time of the Buddha (Omvedt, 2003) (Fausboll, The Jataka, together with its commentary, 1896). The Jātaka (as translated by Cowell & Rouse) conflates the terms used for an architect, a foreman, a mason, a carpenter and a builder with each other (offering all these terms for often the same terms – vaddhaki and itthaka-vaddhaki and maha-vaddhaki); whereas the terms are literally distinct (Cowell & Rouse, 1907). The terms in the story can be literally translated as:

1. Vaddhaki – carpenter (in some cases, a builder)
2. Itthaka-vaddhaki – brick-carpenter (or less literally, mason or stonemason)
3. Maha-vaddhaki – master-carpenter (or less literally, an architect or foreman)

The terms were not as exclusive as we might consider them to in contemporary construction terminology; with the role of a carpenter (vaddhaki) in the Buddhist texts extending from novelties to furniture and houses; with that of the master-carpenter (maha-vaddhaki) extending from houses to fortifications and cities (Cowell & Rouse, 1907) (Fausboll, 1896). Yet, the lack of use of the term “vāstu” or “vātthu” in these texts is significant for establishing the argument for the (lack of the) role of “vāthuvijjā” in design and construction in the apparent age of the Buddha (or at least the texts themselves, ranging from 500 BCE – 300 CE).

#### 2.2.4.8. Milinda Panha

The Milinda Pañha (lit. 'Questions of Milinda') is a Buddhist text which dates from sometime between 100 BC and 200 AD, and is purported to have been composed after a session of questions and answers at the court of the the Indo-Greek king Menander I from Bactria; whose capital was at Sagala (Sialkot) in modern-day Pakistan (Trenckner, 1880).

The standard works referred to for this text were Davids' translations and critical commentaries on the same in 2 volumes (Davids T. W., 1890a) (Davids T. W., 1890b).

The text is seminal for it is the earliest text attributed to Indian traditions which describes the method of planning and laying out a city.

##### 2.2.4.8.1. Description of Sagala city

The description of the city of Sagala in the text goes thus (Rhys Davids, 1890, pp. 2-3):

*"... There is in the country of the Yonakas, a great centre of trade, a city that is called Sagala, situated in a delightful country well watered and hilly, abounding in parks and gardens and groves and lakes and tanks, a paradise of rivers and mountains and woods. Wise architects have laid it out [Sutavanta-nimmitam] .... Brave is its defence, with many and various strong towers and ramparts, with superb gates and entrance archways; and with the royal citadel in its midst, white walled and deeply moated. Well laid out are its streets, squares, cross roads, and market places. Well displayed are the innumerable sorts of costly merchandise with which its shops are filled. It is richly adorned with hundreds of alms-halls of various kinds; and splendid with hundreds of thousands of magnificent mansions..."*

The points important to notice here are:

1. The laying out of a city is recognized to be a planned exercise; headed by an architect, following a specific methodology - which is known popularly enough to be referred to in examples even by non-technicians
2. The work of an architect is considered to be of skill and wisdom
3. The references to monumental religious structures are absent, but the defensive provisions of the city are described with admiration

##### 2.2.4.8.2. Description of building of a city - 1

The motif of the skill of the city-architect appears here for the first time, as an analogy for the basis of excellence of virtue in a monk (Rhys Davids, 1890, p. 34)

*'Just, O king, as the architect of a city, when he wants to build one, first clears the site of the town, and then proceeds to get rid of all the stumps and thorny brakes, and thus makes it level, and only then does he lay out the streets and squares, and crossroads and market places, and so build the city; just so does the recluse develop [sic] in himself the five moral powers, and so on, by means of virtue, on the basis of virtue.'*

The key points to note in this short description is that:

1. The architect of the city is referred to as the Nagara-vaddhaki (Horner, 1963)
2. The process of laying out a city is considered to be a wise and skilled endeavor to merit comparison to the practice of the monk
3. The process of planning a city as described in sequence are:
  - a. Site clearance
  - b. Removal of unnecessary vegetation and leveling of land
  - c. Laying out of streets, squares, crossroads and marketplaces (public domain)
4. The process of divination, geomancy, benedictory rites etc. are absent; demonstrating that these practices were not prevalent or not considered necessary for laying out a city in this region

##### 2.2.4.8.3. Description of building of a city - 2

Book V: The Problem of Inference

(Rhys Davids, 1890, pp. 329-331)

*'Venerable Nāgasena, give me an illustration.'*  
*'Just, O king, as the architect of a City, when he wants to build one, would first search out a pleasant spot of ground, with which no fault can be found, even, with no hills or gullies in it, free from rough ground and rocks, not open to the danger of attack. And then, when he has made plain any rough places there may still be on it, he would clear it thoroughly of all stumps and stakes, and would proceed to build there a city fine and regular, measured out into suitable quarters [Bhāgaso mitam], with trenches and ramparts thrown up around it, with strong gateways, watch-towers, and battlements, with wide squares and open places and junctions (where two roads meet) and cross-ways (where four roads meet), with cleanly and even high roads, with regular lines of open shops (bazaars), well provided with parks, and gardens, and lakes, and lotus-ponds, and wells, adorned with many kinds of temples to the gods, free from every fault. And then when the city stood there in all its glory, he would go away to some other land. And in course of time that city might become ... the meeting-place of all sorts and conditions of men. Then ... all these coming to take up their residence there, and finding the new city to be regular, faultless, perfect, and pleasant, would know: "Able indeed must that architect have been by whom this city was built!"*

The points to be noted in this extract include:

1. The motif of an architect laying out a city is repeated thrice in the book, with connotations of great skill and wisdom being attributed to the work; thus, the profession of planning must have been both popular and held in high regard for such frequent mentions to be found in a religious compilation.
2. The process of laying out a city is described in the following steps:
  - a. Site selection
  - b. Site clearance and levelling

- c. Removal of unnecessary vegetation
- d. Measuring into quarters
- e. Construction of trenches, ramparts, gateways, watchtowers and battlements
- f. Laying out of streets, squares, junctions and crossroads
- g. Provision of bazaars, parks, gardens, lakes, ponds, wells and temples

#### 2.2.4.9. **Sumaṅgalavilāsini**

The Sumaṅgalavilāsini is an ancient (about 500 CE) Pali commentary on the the Dīgha Nikāya (Long Discourses of the Buddha) written by the Buddhist scholar-monk Buddhaghosa in the Great Monastery (Mahāvihāra) at Anurādhapura, Sri Lanka (Gethin, 2012). This text offers valuable information about post 100 CE Buddhist philosophy as it was transmitted and practiced in Southern India and Sri Lanka; with the author being considered to have been born in Kanchi in Tamil Nadu (Hinüber, 1996, p. 102).

##### 2.2.4.9.1. **Definition of Vāṭṭhuvijjā**

In the Sumaṅgalavilāsini (I.1.21) of the Buddhaghosa, vāṭṭhuvijjā is defined thus (Otter, 2016):

*“... the science of determining the merits and flaws in the property of a house, garden / park, etc. by getting the knowledge of the properties of the soil by bare sight...”*

*“... [the vāṭṭhuvijjāchāriyas see] the virtues and flaws underground in a room of thirty cubits, and an area of eighty cubits.”*

##### 2.2.4.9.2. **Auspicious Signs (Lakkaṇa Cakka)**

The text contains one of the earliest (c. 500 CE) extended lists of the auspicious signs that surround the Buddhapāda – the anthropomorphic representation of the feet of the Buddha, intended as an object of worship and devotion, thus (Karunaratne, 1976):

- |                  |                   |                    |                     |
|------------------|-------------------|--------------------|---------------------|
| 1. Spear         | 2. Śrīvatsa       | 3. Nandīvāvarta    | 4. Svastika         |
| 5. Vatamsak      | 6. Vaddhamāna     | 7. Macchayuga      | 8. Bhaddapitha      |
| a (ear ornament) | ka (Vardhamānaka) | la                 |                     |
| 9. Ankuṣa        | 10. Pāsāda        | 11. Torana         | 12. Setachatta      |
|                  | (mansion)         | (triumphal arch)   | (White umbrella)    |
| 13. Khagga       | 14. Talavantha    | 15. Morakattha     | 16. Valavijani      |
| (sword)          | (palmleaf fan)    | (peacock feathers) | (flywhisk)          |
| 17. Unhisa       | 18. Manipatta     | 19. Sumanadam      | 20. Niluppala       |
| (frontlet)       | (bowl of gems)    | a (garland of      | (blue water lilies) |
|                  |                   | flowers)           |                     |

- |                    |                      |                       |                  |
|--------------------|----------------------|-----------------------|------------------|
| 21. Rattupala      | 22. Setuppala        | 23. Paduma (red       | 24. Pundarika    |
| (red water lilies) | (white water lilies) | louts)                | (white lotus)    |
| 25. Punnagha       | 26. Punnapati        | 27. Samudda           | 28. Cakkvala     |
| ta                 | (filled              | (ocean)               | (Caakravata      |
| vessel/pot)        | (filled bowl)        |                       | mountain range)  |
| 29. Himava         | 30. Sineru           | 31. Candima           | 32. Suriya (sun) |
| (Himalaya          | (Mountain            | (moon)                |                  |
| mountain)          | Mahameru)            |                       |                  |
| 33. Nakkhatta      | 34. Cattaro          | 35. Dve paritta       | 36. Raja         |
| (constellations)   | mahadipa (Four great | dvipa                 | sahassani        |
|                    | islands)             | (Two                  | thousand         |
|                    |                      | islands that surround | monarch          |
|                    |                      | them)                 | accompanied by   |
|                    |                      |                       | his retinue)     |

Karunaratne traces the development of various later iconographic traditions such as the Theravada āṣṭamangala, the Sri Lankan sodasamangala etc. from the texts of these localized traditions (Karunaratne, 1976) (Karunaratne, 1997).

##### 2.2.4.10. **Mahāniddesa-Aṭṭhakathā / Saddhammapajjotikā**

The Mahāniddesa-Aṭṭhakathā is a text commentary on the Mahāniddesapāḷi (considered to be a part of the Khuddakanikāya) and is also called as Saddhammapajjotikā or Saddhammapakāsinī (Upasena, 1998). This text is attributed to the Buddhist monk Bhadanta Upasenatthera (also referred to as Upatissa or Upasena), who wrote the text (sometimes referred to as the Saddhammatthitika) while residing near the Mahā Cetiya within the precincts of the Mahāvihāra in Anurādhapura in Sri Lanka (Malalasekera, 1938), possibly in the pre-500 CE era. This text defines vāṭṭhuvijjā in the following distinct statements (Otter, 2016):

*“Vāṭṭhuvijjā is the science [Pali ‘sattha’ = Sanskrit ‘śāstra’], through which one determines whether a village [gama], a town [nigama], a city [nagara] (and other such [settlements]) are favourably or unfavourably located [niviṭṭha].”*

This excerpt states clearly the case for a geomantic-divinatory origin and epistemology for Vāstuvidyā in the pre-500 CE era; with the practice applied to “determine the ideal sites” for houses to gardens (pleasances) to settlements (villages, towns, cities etc.).

### 2.2.4.11. Mandalas in Buddhist Literature

Mandalas are considered as a representation of the cosmos via esoteric and mystic diagrams that are at once tangible and multi-layered. In Tantric Buddhist disciplines, mandalas are also sacred enclosures or architecture for housing the otherwise uncontainable essence of a central deity and their associations (Wayman, 1977).

Wayman claims that the Dalai Lama (in the book 'The World of Tibetan Buddhism') describes mandalas as being: "... the celestial mansion, the pure residence of the deity." (Wayman, 1977). Wayman elaborates the multi-valent layers of the *mandala* as reflecting the microcosm and the macrocosm in the same composition via the phrase "*As without, so within*" - '*Yatha bahyam tatha dhyatmam iti* |' in Pali" from the early text of Nispannayogavali by Abhayakaragupta (Wayman, 1977).

Sanderson attempts to establish the position that the mandalas and their associated rituals in Buddhism were inspired and adapted from Tantric Śaivism's earlier practices (Sanderson, 1995) (Sanderson, 1986).

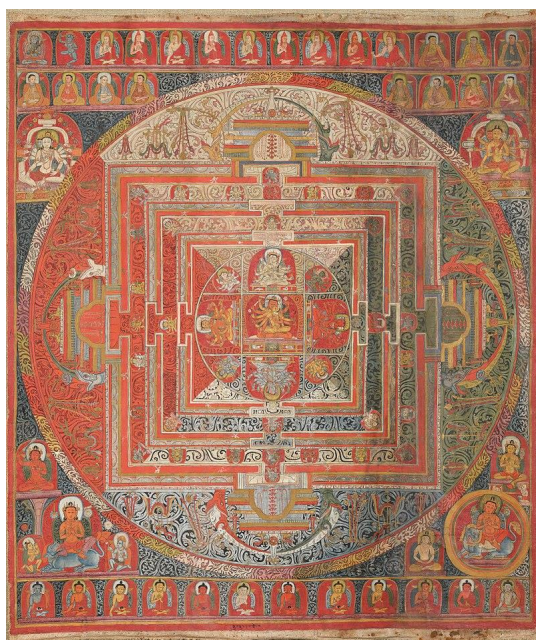


Figure 2-31: Tibetan tempera painting of the Manjuvajramandala with 43 deities  
Source: Museo d'Arte Orientale via Google Cultural Institute, 1400-1500 CE;  
unknown artist

### 2.2.4.12. Buddhist Aṣṭamaṅgala

#### 2.2.4.12.1. Aniconic Origins of the Aṣṭamaṅgala

Anālayo analyses the tradition of the Buddhapada and other iconographic representations of the Buddha and his teachings as having their basis in the multiple textual descriptions of the thirty-two physical marks (Lakkaṇa / Lakṣaṇa) of a "great person" (mahāpuruṣa – implying an enlightened being) in the early Buddhist scriptures (Anālayo, 2017). These physical marks or signs are studied as part of an esoteric divinatory lore exclusively by the Brahmins of the Buddhist scriptures, and are often used to identify the Buddha as being the 'mahāpuruṣa' worthy of worship and/or respect (Anālayo, 2017). This assumption is supported by the chapters in the Brihat Samhita (written by the Brahmin astrologer Varāhamihira) which expound on such signs (signs of men (Chapter 68 - puruṣa-lakṣaṇa), five great men (Chapter 69 - pañca-mahāpuruṣa) etc. in the Iyer translation (Iyer, 1884)), which is noticed by Anālayo as well. The artistic representation of these canonical descriptions (as independently produced objects of veneration) could be first noticed in the Gandharan samples (c. 100 CE – 200 CE) though earlier examples are also to be found on the pillars of the Sanchi stupa (c. 100 BCE – 100 CE) near their bases (Anālayo, 2017). The early (pre-200 CE) Gandharan depictions of the impressions of the Buddha's feet already demonstrate the association of specific icons (such as the svastika, the triratna/Buddhist nandyavarta, the padma (lotus), the camara (flywhisk), the cakra (wheel) etc.) with the Buddha and his teachings (Eskenazi, 2002). The raised Buddha footprints which were also created as independent cult objects of veneration at Amaravati is another early (c. 100-200 CE) South Indian example of the later 'Buddhapada' aniconic iconographic tradition, where specific icons are associated with the Buddha and his teachings (Sensabaugh, 2017). This is understood to have occurred from the early artistic tradition of aniconism followed for the depictions of the Buddha in early Buddhist religious art and iconography, resulting in the development in iconography of multiple 'signifiers' or icons for the various phases and events in the Buddha's life (Linrothe, 1993); such as:

- a) The 'signifier' iconographic element (eg.: the 'empty throne' at Sanchi's reliefs) - depicting the Buddha's presence after enlightenment (also possibly the origin for the Aṣṭamaṅgala icon of 'bhadrasana' or 'bhadrapitha');
- b) The Buddha's 'footprints' iconographic element – possibly originally depicting the various episodes in the Buddha's life where his physical marks (such as the footprints) allowed for Brahmins to establish his innate capacity for and eventual achievement of enlightenment (possibly the origin for the later



iconographic traditions of the Buddhapada – which themselves lead to the development of various traditions of auspicious icons and symbols associated with the Buddha and his teachings; such as the Aṣṭamaṅgala, the Śoḍasamaṅgala etc.)



*Figure 2-32: Early (100 BCE-100 CE) sculptural representation of the Buddhapada as part of a gateway pillar at the Sanchi stupa  
Source: Anālayo, 2017*



*Figure 2-33: Impressions of the feet of the Buddha - a pre-200 CE Gandharan religious artwork  
Source: John Eskenazi, 2002*

#### 2.2.4.12.2. Theravada Buddhist Aṣṭamaṅgala

The Sri Lankan Theravada Buddhist tradition also possesses Aṣṭamaṅgala traditions where they are worshipped as icons of the Buddhadharmā (teachings of the Buddha) and are often found consistently used from about 200 CE to 1100 CE in Sri Lankan Buddhist religious iconography (Karunaratne, The Healing Powers of the Waters of Anavatapta, 1990). Karunaratne argues the case for considering these Aṣṭamaṅgala as an iconographic representation of the primordial waters (Karunaratne, The Healing Powers of the Waters of Anavatapta, 1990) of the lake Anavatapta (at whose centre the great mountain Meru rose and the 4 great rivers flowed in 4 cardinal directions) though these icons are also found to represent specific cardinal directions (Karunaratna, 1980/81) in some late (600 CE – 1000 CE) Sri Lankan Theravada religious iconography. The list expanded over the centuries to include more than 32 distinct signs or icons, as noted in the c. 500 CE Sri Lankan Theravada Buddhist exegetical text Sumaṅgalavilāsinī (Karunaratne, 1976).



*Figure 2-34: Drawing of the Buddhapada (c. 300 CE - 400 CE) found at the Jetavanarama stupa at Sri Lanka  
Source: Karunaratne, 1976*

The particular signs recognizable in the Sri Lankan Jetavanarama Buddhapada (as deciphered by Karunaratne) are (Karunaratne, 1976):

1. Cakra – wheel



2. Sakti – spear
3. Ankusa – elephant goad
4. Bhadrapitha - throne
5. Sankha – conch
6. Camara – flywhisk
7. Chatra – umbrella
8. Srivatsa – endless knot
9. Matsya-yugala – twin fish
10. Purnaghata – pot / urn / pitcher
11. Vardhamanaka – powder flask / treasure chest / vase
12. Svastika – Indian mystic cross



Figure 2-35: Tibetan Buddhist Astamangala icons  
Source: Tibetan Buddhist Encyclopedia, 2014

#### 2.2.4.12.3. Tibetan Buddhist Aṣṭamaṅgala

The Tibetan Buddhist traditions employ a set of eight symbols, which differ from the Theravada Buddhist traditions, in household, religious and public art (TBE, 2014):

1. Right-turning white Conch shell (dung gyas 'khyil) or sankha
2. Endless knot (dpal be'u) or Srivatsa
3. Two goldfish (gser nya) or Matsya-yugma
4. Lotus (pad ma) or Padma
5. Parasol (rin chen gdugs) or Chattra
6. Urn or Vase (bum pa) or Ghata / Kumbha / Kalasha
7. Wheel (khor lo) or Chakra / Dharmachakra
8. Victory Banner / Flag or (rgyal mtshan) or Dhvaja

9. Fly whisk or Chamara or Chowrie or Prakirnaka (this icon is used in the place of the wheel in Newari Buddhism or Nepali Buddhism – the rest remain the same)

#### 2.2.5. Jain Religious Literature

The Jaina texts are unique in that they provide both morphological as well functional analyses for the classification of towns and villages. There are also frequent references and descriptions of the rural lifestyle with no appreciable bias in the treatment of material. The texts are contemporaneous with the Early Historic period roughly dating to the period between 300BC and 500 AD. Yet, the societies described in these texts are significantly more rural and agrarian in comparison to descriptions in both the Hindu religious scriptures as well as the secular technical treatises (Ghosh A. , The City in Early Historical India, 1973) (Singh U. , 2008). The Jaina Agamas, such as the Aupapatik Sutra, hold that the ideal education of a Jaina student also included learning architecture (vatthuvijjam), building utility (vatthunivesan) and town planning and urban development (nagamamanam) as part of the knowledge of the 72 contemporary arts for a well-rounded education (Amarmuni & Surana, 2003, p. 277).

Uttarajjhayanani – XV and the Dasaveyaliyam, both of which are compilations of the virtues of the ideal monk as per the Jaina prophet Mahavira; contains strong discouragement of the practice of Vastushastra for monks intending to lead a noble and spiritual livelihood (Tatia & Muni, 2001). The exact terms used to refer to the practice is 'vāthuvijjā' which can be read as the Prakrit equivalent of 'Vāstuvidyā' (Jain, 2010); the gloss for which by Jaina commentators is provided as 'the science of building sites' (Tatia & Muni, 2001).

Vāthuvijjā and Vaddhakisippa were understood by Jaina texts such as the Aupapatika Sutra (Ovavaiya Suya) to be complementary sciences, with the subjects of study including the planning and founding of cities, towns and villages, the laying out of parks, gardens etc.; along with familiar subjects such as the erection of palaces, council halls, forts gateways etc., the examination and selection of sites, soils, materials etc. and so forth (Law, 1949, p. 86). Some Jaina literature classifies settlements in the Early Historic period by morphological characteristics as compared to the purely economic-administrative ontology as seen in Buddhist literature.

##### 2.2.5.1. Components of a typical village in Jaina texts

Some of the components of a typical village as understood from the Jaina texts are (Ray A. , Villages, Towns and Secular Buildings in Ancient India, 1964, p. 37):

- 1 **Dhuti prakara:** mud wall or ramparts that enclose the village
- 2 **Bhanda sala/Panita sala:** building where potters made and sold their earthen wares

- 3 **Kamma sala:** village smithy
- 4 **Agamana griha:** rest house for guests providing food and shelter
- 5 **Sabha griha:** council hall or meeting hall, that also served as a rest house sometimes
- 6 **Maddhama goshta:** the village centre / square, at/near which the sabha griha was situated
- 7 **Prapa:** a covered watershed that was usually attached to the sabha griha
- 8 **Deva kula:** temple
- 9 **Chatuhshala / Svaparaka / Koshtaka / Koshtaka palla:** grain storehouses that were of various types
  - 9.1 made of mud/brick
  - 9.2 structure with mud floors and walls of piled straw rings plastered with mud and cowdung
  - 9.3 bamboo and straw structures raised on platform (Mancha) resting on bamboo posts

The boundaries of a village are variously defined by natural features, deliberately drawn boundaries, the limit that the cattle go for grazing, the limit that a woodcutter can go to fetch wood back to the village etc. (Ray A. , Villages, Towns and Secular Buildings in Ancient India, 1964).

### 2.2.5.2. Rajaprashnaya

The 13th century Jaina canonical text Rajaprashnaya by Malayagiri prescribes the start of the process of laying out a village by locating the site for the cemetery (mahasthandila) in the ideal location (Tatia & Mahendramuni, 1981).

### 2.2.5.3. Brihat Kalpasutra Bhashya

The Jaina text Brihat Kalpasutra Bhashya has many such classifications of village types; of which the ones as described by Ray are compiled below (Ray A. , Villages, Towns and Secular Buildings in Ancient India, 1964):

#### 2.2.5.3.1. Form-based Classification

1. Uttaana-Mallakaakaara  
The village looks similar to an open bowl or a circle
2. Avanimukha  
A village in the pattern of a circle with a temple or tree at its centre; causing the village to look like an inverted bowl.
3. Khanda  
The village is shaped like a half-circle with the village well and trees on one side.
4. Uttaanaka-khanda-malla samsthita

This is of unknown specifications, derived from the Uttaana-mallakaakaara village type

#### 5. Avanimukha Samputaka

This is a variation of unknown specifications, derived from the Avanimukha village type

#### 6. Bhitti-Samsthita

The village is planned along the wall with parallel rows of trees along the sides and on the eastern face

#### 7. Patalika

A village with or planned along avenues

#### 8. Valabhi

Villages which have trees planted at all four corners

#### 9. Ruchaka

The village settled on uneven ground and ringed by trees

#### 10. Kashyapa

The village whose settlement area is triangular in shape (similar to 'the razor of a barber')

### 2.2.5.3.2. Function-based Classification

#### 1) Madamba

The village which was isolated from other villages, such that for a distance of two and half gavyutis or seven koshas, no other village or pasture ground was to be found

#### 2) Akara

A mining village

#### 3) Ghosha

A village populated by cow-herds

#### 4) Samvaha

A type of village located in hilly terrains or other inaccessible places, whose main population were farmers or traders who conducted their business elsewhere, but returned to the village by the end of day

### 2.2.5.4. The Jaina Aṣṭamaṅgala

The names for the templates prescribed for the settlements in the late Vāstuśāstra texts (the Mānasāra and the Mayamata) display some similarities to the set of names used for the eight auspicious objects in Jaina and Buddhist worship, known as the Aṣṭamaṅgala. These objects are found in varied lists depending on the medium and the time-period of the source – Early Historic stone votive tablets, Early Medieval religious inscriptions, 13<sup>th</sup> century text on pilgrimage places etc. The earliest known material sources for these objects are the Āyāgaṇas, which were carved stone plaques intended as 'votive tablets' or 'homage panels' (objects of devotion and display of piety), known

to have been produced within the Jaina traditions in and around Mathura (the Kaṅkālī-Tilā in particular) primarily in the period between 100 BCE and 100 CE (Quintanilla, 2000). These Āyāgapāṭas are of two types (Quintanilla, 2000):

1. Pictorial Āyāgapāṭas:- stone carved anthropomorphic representations of the worship of liberated beings, divinities or accomplished monks, surrounded by auspicious symbols or icons (the early precursors of the Jaina Aṣṭamaṅgala).
2. Diagrammatic Āyāgapāṭas:- stone carved cosmological diagrams which depict the dome of the sky with the arhat (liberated being in Jainism) seated in the central circle, surrounded by symbols of his emanations into the world (the early precursors of the Jaina Aṣṭamaṅgala) which are worshipped.

The two dominant extant Jaina traditions of today are the Digambara tradition and the Śvetāmbara tradition, who have slightly varying lists of Aṣṭamaṅgala, though in both traditions they retain their auspiciousness and worshipfulness (Balbir, 2015).

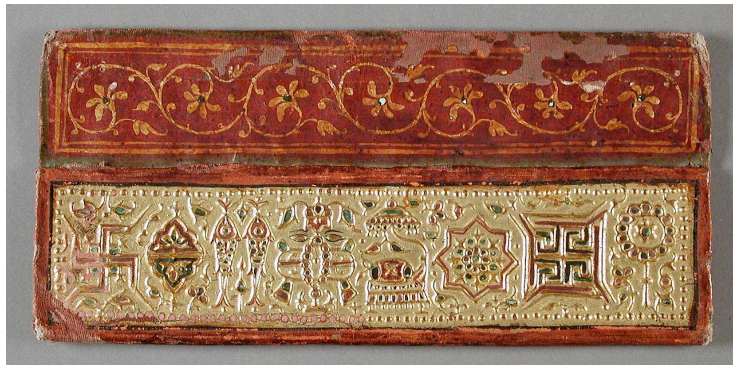


Figure 2-36: Silver worship panel of Śvetāmbara Aṣṭamaṅgala icons  
Source: 16<sup>th</sup> century Western Indian manuscript, held by LACMA, USA



Figure 2-37: Brass icons of Digambara Aṣṭamaṅgala at a Tamil Nadu Jain temple  
Source: Nalini Balbir, 2015

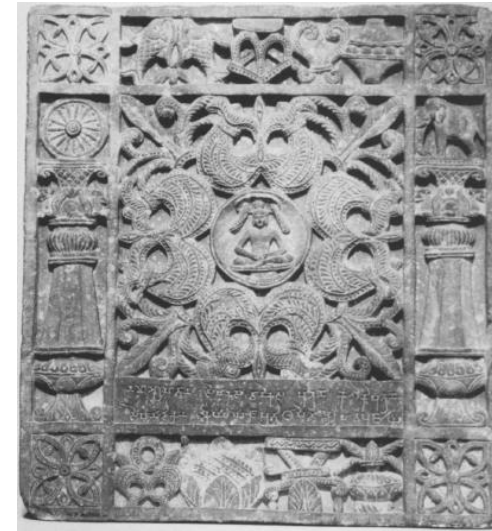


Figure 2-38: Sihanāmdikā Āyāgapāṭa - Diagrammatic type of Āyāgapāṭa  
Source: Quintanilla, 2000

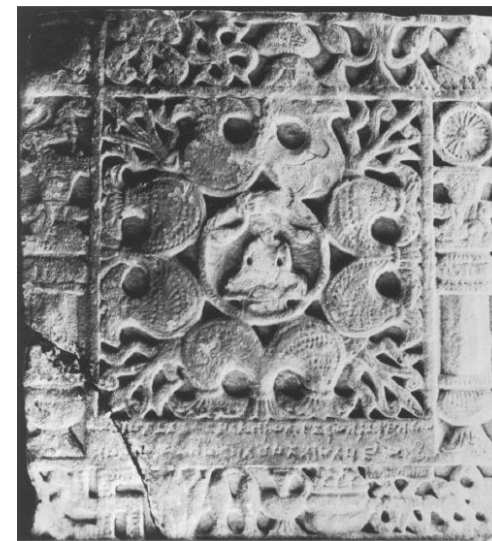


Figure 2-39: Acalā Āyāgapāṭa - Diagrammatic type of Āyāgapāṭa  
Source: John M. Rosenfield via Quintanilla, 2000

This discussion on the Jaina astamangalas attains significance upon comparison of these icons and their early (c. 100 BCE) origins with the application of these icons to the settlement types found in late (post-1000 CE South Indian Vāstuśāstra texts).

## 2.3. Key Non-Religious Literature

. The aim of these elaborations are to understand the composition of an “ideal Vāstuśāstra text” and the first known appearance in older literature for the paradigms that are now encountered in Vāstuśāstra literature specifically. This manner of deconstruction and analysis of Vāstu literature has been attempted previously by Bhattacharya (Bhattacharya T. , 2006) and Otter (Otter, 2016) among other authors.

### 2.3.1. Sushruta Samhita

The Sushruta Samhita is a famous Early Historic Indian text on medicine and surgery (Tipton, 2008). The age of the text is a matter of debate, and the consensus currently is that the text may have been compiled as early as 600 BCE (due to the references in the Shatapatha Brahmana) with the extant recension of the text by Nāgārjuna understood to have been compiled before 400 CE (Ray, Gupta, & Roy, 1980). It is famous for its description of surgical procedures, instruments and materials; including the comparatively advanced procedures of rhinoplasty (nose job), perineal lithotomy (kidney stone surgery) etc. (Sushruta & Bhishagratna (ed. & trans.), 1907). These texts are important for the development of Vāstuśāstra since they are the earliest known literature on the concepts of *shalya*, *marma*, *nadi*, *siras*, *rajju* etc.; all of which are ontological concepts of Vāstuśāstra as well, especially with regard to the divinations associated with the site and the site’s Vāstupuruṣa.

#### 2.3.1.1. Context

The earliest practices and theories of Ayurveda are seen to be derived from the books and teachings of the Ātreya school of the Atharva Veda (around 1000 BCE), which was practiced and elaborated upon by wandering physicians (known as ‘*Charaka*’) (Meulenbeld, 1992). The definitive texts of Ayurveda are the “*Brihat Trayī*” (literally ‘the big three’), i.e., Charaka’s *Charaka Samhita* (on the theory and practice of medicine), Sushruta’s *Sushruta Samhita* (primarily on the nature and practice of surgery), and Vāgbhata’s *Ashtāṅgasamgraha* (development and refinement of contemporary Āyurveda, based on the previous two texts); all of which continue to be referred to for the teaching and practice of Ayurveda (Manasa, 2016).

The texts are not exclusively empirical or scientific, with many religious and magical remedies also suggested alongside the surgical and medical solutions provided (Engler, 2003). The literary tradition as well as the practice of Ayurveda underwent a continuous and eclectic changes leading to a syncretic tradition in practice now in India, which contains influences derived from historic Arabic medicine as well as post-colonial



Western nosography; this results in what Meulenbeld underscores as the search for the ‘original’ Ayurveda in India today (Meulenbeld, 1992).

### 2.3.1.2. Purusa in Ayurveda

The Sāmkhya school of philosophy is integral to early Ayurveda since the Prakṛti-Puruṣa theory of cosmogony as well as the theory of the 3 guṇas (both core features of Sāmkhya philosophy) are an essential part of Ayurveda theory (Gokhale B. V., 1953). The atom-like units of consciousness called Puruṣa are considered to be the source of the human’s real selves, the vital energy and the controller-directors of all actions (Sushruta & Bhishagratna (ed. & trans.), 1907, p. xxvii). Thus, the concept of ‘Puruṣa’ and that of ill health (such as those from ‘Shalyas’) occurring primarily to this Puruṣa are central to Ayurveda (Tipton, 2008).

### 2.3.1.3. Marma and Siras

The texts define these terms thus (Sushruta & Bhishagratna (ed. & trans.), 1907):

Marma: vital points/parts of the body

Siras: veins

These siras and marmas (through the 7 constituents of the body (*dhatu*)) are considered important centres and channels of the body’s vital energy (Dalai, 2019).

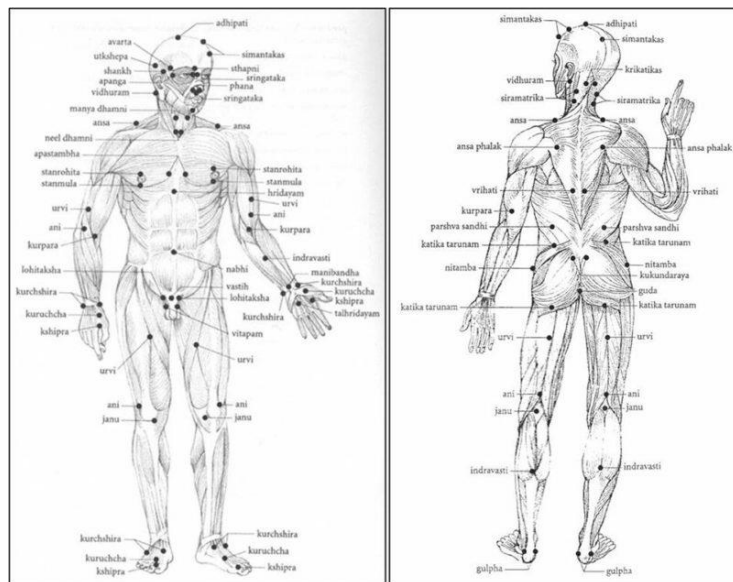


Figure 2-40: Marma points on the human body (*puruṣa*)  
Source: Wasatch Ayurveda and Yoga

### 2.3.1.4. Shalya

The text defines the Shalyam as “an impeding or obstructing agent” for the entire organism; and names the science dealing with the nature and characteristics of such Shalya as Shalya-Shastra (or Surgery in modern terms) (Sushruta & Bhishagratna (ed. & trans.), 1907). The text also differentiates between idiopathic or bodily generated (Sharira) Shalya (such as a hair, nail, embolised blood, excrements (Mala), or deranged humours of the body (Dosha)); and extrinsic Shalya (which are from a source other than the preceding ones and can include particles of iron, bone, stems, horns, etc); the removal of which is described in the teht (Sushruta & Bhishagratna (ed. & trans.), 1907, p. 247). Elsewhere in the same text, Shalya is also defined as “Any foreign matter, lodged in a human organism and proving painful to it” (Sushruta & Bhishagratna (ed. & trans.), 1907, p. 3).

### 2.3.1.5. Shalya Tantra

The text (Sushruta Samhita) defines itself as a Shalya-Tantra, i.e. a text on surgery; and also refers to the following authors - Aupadhenava, Aurabhra, Sushruta and Paushkalāvata, as having written works on surgery which were referred to by Karavirya, Gopura-rakshita, etc. for their Tantras or texts (Sushruta & Bhishagratna (ed. & trans.), 1907, p. 141). This reflects the rich tradition of medical literature in the pre-400 CE period with the term ‘*Shalya*’ being understood as a foreign but internally embedded particle and ‘*Shalyatantra*’ being clearly understood as the contemporaneous term for ‘surgery’ (Tipton, 2008).

### 2.3.1.6. Application in Vastusastra

The application of the concept of harm to the marma points causing harm to the human is mirrored in the concepts of not building upon the marma points or not establishing loads on these points which are found discussed in the Matsya Purāṇa, Brihat Samhita etc. onwards; demonstrating a post 500-CE integration of Ayurveda’s concepts into Vāstuvidyā.

### 2.3.2. De Architectura

De architectura (literally ‘On Architecture’) was a set of ten texts written on the subject of architecture by the Roman architect (engineer and author) Vitruvius between 27 BCE – 14 CE at or near Rome (Morgan (trans.) & Vitruvius, 1914). The work is based on Vitruvius’ professional experiences, older technical works (such as the works of Hermogenes, Publius Septimius, Terentius Varro etc.), works of his contemporaries etc. (Whittaker, 2013) and many of these works are cited within the text though they are not currently extant (Morgan (trans.) & Vitruvius, 1914). His work later became the standard



of reference for European architectural traditions, (especially Renaissance-era revivalist architecture) and no extant text on architecture and allied subjects from this period is found which is as comprehensive, detailed and historical as this set of ten texts (Morgan (trans.) & Vitruvius, 1914). It can be understood that Vitruvius and his works became a standard for reference within about a century of their publication, since references are made to Vitruvius' works on architecture and his works on plumbing in the post-84 CE report on the Roman Empire's aqueducts by Sextus Julius Frontinus, wherein it is also mentioned that Vitruvius was influential in standardising the components (such as pipe sizes, diameters etc.) used in the water supply systems of the following periods (Whittaker, 2013). Vitruvius' works oriented (for Europe and much of the Western world) architectural education as well as the analysis of historic architecture for centuries (Britannica T. E., Vitruvius, 2019).

### 2.3.2.1. Contents

The work is composed of ten texts, each prefaced by an introduction and concluded with ending notes. It is dedicated to Caesar (who is understood to be Augustus Caesar (r. 27BCE – 14 CE) based on internal historical references in the text) and mentions the ruler, Vitruvius' architectural contemporaries, current practices in the Roman Empire as well as historical buildings (many of which are still extant) throughout the text (Morgan (trans.) & Vitruvius, 1914). The ten chapters of the book broadly are:

37. Architectural theory, the architect and urban design
38. Building materials
39. Temples – classification, construction etc.; Columns – orders, intercolumniation etc.
40. Further details on orders; Further details and types of temples
41. Public buildings (forums, theatres etc.) and civic infrastructure (baths, harbours etc.)
42. Private residences
43. Flooring, paints, colours and stucco
44. Water sources, hydraulics, aqueducts, wells etc.
45. Clocks, mensuration, and astronomy
46. Civil and military engines

. The author discusses these topics with an experienced ease and gives simple practical prescriptions for enabling the appreciation and construction of the concepts and structures (respectively) relating to the contemporary perception of architecture, the knowledge of which was composed of (Clarke, 1963):

- 1) *aedificatio* (architecture as understood today)
- 2) *gnomonice* (the construction of sundials and other devices for measuring time)

- 3) *machinatio* (engineering or mechanics) .

The text demonstrates familiarity with religious sacrifices, divination, astrology, sculpture, jewellery and furniture design but doesn't prescribe on any of these topics in depth similar to the aforementioned chapters. This is an important distinction between the Vāstuśāstra traditions and the Vitruvian texts. Acharya attempted to compare in greater detail the prescriptions offered by the Mānasāra (Acharya P. K., 1934) with those of the De Architectura; but the conclusions arrived at by Acharya (such as the early dating of the Mānasāra (before 400 CE), the position of the Mānasāra as the earliest fundamental text for architectural knowledge in Early Historic India etc.) has been refuted by many (Otter, 2009).

### 2.3.2.2. Planning Sequence for Settlements

The fortified settlement (usually a city or a town in the De Architectura) is planned in the following sequence (as understood from the ordering of the chapters and the instructions) in the texts (Morgan (trans.) & Vitruvius, 1914):

- i. Selection of site (by analysing the following)
  - a. Marshes and vapours
  - b. Sun exposure
  - c. Climate (including effects derived from above two factors, and seasons)
- ii. City walls (including as below)
  - a. Towers, battlements etc.
  - b. Materials and construction methods
- iii. Street layouts (by analysing the following)
  - a. Winds and their natures at site
  - b. Cardinal directions
- iv. Temples and forums (primarily prescribing their locations in a city)

### 2.3.2.3. Epistemology of Divination of Sites for a City

Vitruvius mentions and seems to support the divinatory practice of extispicy, for the selection of a good site, as was practiced by their predecessors (Book 1 Chapter 4 Verse 9) (Morgan (trans.) & Vitruvius, 1914):

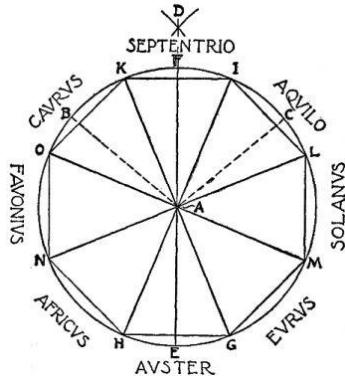
*"I cannot too strongly insist upon the need of a return to the method of old times. Our ancestors, when about to build a town or an army post, sacrificed some of the cattle that were wont to feed on the site proposed and examined their livers. If the livers of the first victims were dark-coloured or abnormal, they sacrificed others, to see whether the fault was due to disease or their food. They never began to build defensive works in a place until after they had made many such trials and satisfied themselves that good water and food had made the liver sound and firm. If they continued to find it abnormal, they argued from this that the food and*

*water supply found in such a place would be just as unhealthy for man, and so they moved away and changed to another neighbourhood, healthfulness being their chief object."*

The epistemologic rationale for hepatomancy (here defined only according to Vitruvius) is the health of the inhabitants of the land due to local features, the mechanism for which is independent of the indications from gods or other non-human entities. This need not have been the original motivations of his Roman predecessors, given that this form of divination was practiced in contemporaneous Rome and earlier in Etruscan religions, and much earlier in Mesopotamia, as a sign from the gods of their favour or opposition for a particular (human) proposal (Johnston, 2005) (Annus (ed.), 2010). Both these epistemes are different from the rationale of Vāstuśāstra or even early Vāstuvidyā, where the divination of lands or sites which were ideal for construction were determined based on innate properties or features which were determined probably by the means of both intuition and training.

#### 2.3.2.4. Orientation and Layout of Cities

The sequence of steps for orienting of cities and their streets begins with the ascertaining of the various winds and their behaviour at the selected site – for the purpose of which a diagram was made which identified the winds acting at the site (Book 1 Chapter 6).



*Figure 2-41: Directions of winds as ascertained at sites according to Vitruvius  
Source: Morgan, 1914*

This identification was then supported by the determination of the four cardinal directions by the means of a 'shadow-tracking' gnomon located at the centre of the site (Book 1 Chapter 6 Verse 6, Verses 29-31). The streets of the city were then laid out in orthogonal blocks 'between the quarters of two winds', to prevent strong winds from

rushing through the city – this was essential since the Greco-Roman conception of health depended on the balancing of 'humors' which required protection from foul and/or fast winds (Book 1 Chapter 6 Verse 7-8) (Morgan (trans.) & Vitruvius, 1914). The final step was determining location of the religious buildings and civil amenities such as temples, theatres, forums etc. all of which depended primarily on the space within the city and the patron gods and goddesses of the city (Book 1 Chapter 7 Verse 1) (Morgan (trans.) & Vitruvius, 1914):

*"For the temples, the sites for those of the gods under whose particular protection the state is thought to rest and for Jupiter, Juno, and Minerva, should be on the very highest point commanding a view of the greater part of the city. Mercury should be in the forum, or, like Isis and Serapis, in the emporium: Apollo and Father Bacchus near the theatre: Hercules at the circus in communities which have no gymnasia nor amphitheatres; Mars outside the city but at the training ground, and so Venus, but at the harbour. It is moreover shown by the Etruscan diviners in treatises on their science that the fanes of Venus, Vulcan, and Mars should be situated outside the walls, in order that the young men and married women may not become habituated in the city to the temptations incident to the worship of Venus, and that buildings may be free from the terror of fires through the religious rites and sacrifices which call the power of Vulcan beyond the walls. As for Mars, when that divinity is enshrined outside the walls, the citizens will never take up arms against each other, and he will defend the city from its enemies and save it from danger in war."*

This method of description of the locations for the temples and altars finds parallels in the post-500 CE Vāstu prescriptions for the location of temples to certain deities in certain locations (within or outside) of the city – due to their effect upon the settlement.

#### 2.3.2.5. Architecture as a profession in Rome and Greece

A review of historical materials such as inscriptions, texts and coins indicate the significant advancements made in the profession of architecture in Rome and Greece, which was not limited to the building of religious monuments (temples, fanes, pillars etc.) and civic architecture (mansions, halls, assemblies etc.) but included military machines, water systems etc. (Clarke, 1963).

#### 2.3.3. Arthaśāstra

The Arthaśāstra is the single most influential text across all genres for Early Historic India in terms of both history of literature as well as historical literature. The text is a Sanskrit treatise primarily on the subjects of statecraft, economic policy and military strategy, but it also describes and prescribes on various other topics. The authorship is attributed to the legendary Chanakya, who was the first chancellor of the Mauryan empire, though arguments are made for authorship by Vishnugupta, Kautilya and Chanakya (either as separate authors or as different names of the same author); most of the text

supports the claim of authorship by Kautilya (Olivelle, 2013). The text was likely to have been composed and expanded upon by multiple authors and the wide period of 300 BCE – 300 CE is taken by scholars (Olivelle, 2013, pp. 30-31) to be the age of the last recensions of the text before its extant form today was achieved.

### 2.3.3.1. The concept of the City in the Arthaśāstra

The Arthaśāstra treats planning and governance of a city from various domains, such as the role of fortified and centralized capital cities in the administration of an empire to the layout and rooms of the palace that shall be most suited to the various daily needs of the king in that period. Urban planning in the Arthaśāstra is geared towards ensuring optimal martial efficacy of urban settlements with the need for sturdy city walls, naturally defensible locations (near rivers, surrounded by hills etc.) and allocation of garrisons, armouries etc. within the city's matrix for ensuring defensibility (Allchin F., 1995).

### 2.3.3.2. Settlement Typology

The typological distribution of urban centres and towns in the Arthaśāstra are modelled to enable the comprehensive collection of taxes from the region rather than a model dependent on geometric or area-based distribution (Thakur, Urban hierarchies, typologies and classification in early medieval India: c. 750- 1 200, 1994, p. 43). The administrative hierarchy of ruled regions, as proposed by Kautilya, divides the kingdom into 4 states and each state into provinces or regions as follows (Kangle, 1963).

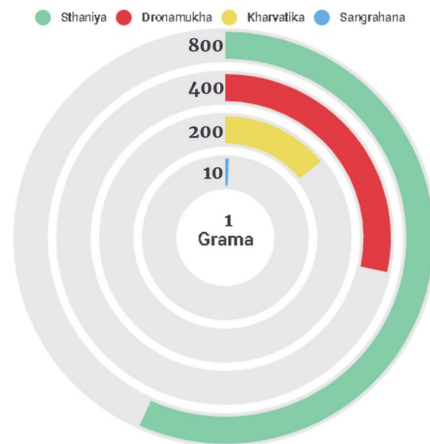


Figure 2-42: Hierarchical planning of villages based on the 'grama' unit, as described in the Arthashastra  
Source: Kangle, 1963

The smallest planned settlement unit was a village ('grāma') which consisted of at between hundred to five hundred families of agricultural people, with the village's boundaries extending up to a krōsa (2,250 yards) in length (Deshkar S. M., 2010). A fortified bureaucratic centres staffed at the king's commands were to be present at the centre of each cluster of villages, with a 'Sangrahana' at the centre of 10 villages, a 'Kharvatika' for 200 villages, a 'Dronamukha' for 400 villages, and a 'Sthaniya' at the centre of 800 villages (Kangle, 1963). The hubs or centres such as the Sangrahana and the Kharvatika were established as fortified garrisons which were also responsible for the collection and accounting of taxes from its jurisdictional region (Kangle, 1963). The text also classifies the urban settlements into the following types:

1. Pattana
2. Putabhedana
3. Pura
4. Durga
5. Shivira
6. Rājadhāni
7. Skandhāvara

This typology was so influential that even the post-1000 CE Vāstuśāstra texts, such as Samarāṅgaṇa Sūtradhāra and Mānasāra, retained elements of this classification in their settlement typology – such as similar naming for settlements, the type of architectural regulations for defence (such as fortifications, ramparts, gates etc.), the method for allocation of status based on number of villages governed etc. (Ghosh A., 1973); though, each text has a unique typology, in the sense that it also combines other typologies (nature of town's economy, presence or absence of palace etc.) in an idiosyncratic manner. This often results in later Vāstu texts containing a less rigorous method for discerning types of settlements as compared to the Arthaśāstra, with issues such as vague interchangeable definitions for settlement types (usually enhanced by the clause attached often to prescriptions which apparently give freedom of judgement to architects (as understood from the term 'yuktyā', which Dagens translates as 'according to circumstances') (Dagens, 2007, pp. cxix-c).

### 2.3.3.3. Land-Use Planning

The Arthaśāstra provides detailed prescriptions for the classification and allocation of lands to uses by considering parameters such as soil quality, precipitation in the region, proximity to the kingdom's frontiers, proximity to natural features (forests, water bodies, mountains, quarries etc.); with the appropriate policies for such lands including taxes and

cesses being prescribed (Kangle, 1963). All potentially useful lands were to be supported by building public reservoirs which were to be connected to roads and markets (which could be volunteered for by the citizens or local leaders) initiated by the king (Kangle, 1963). The king could show special favours to those who built infrastructure for the countryside such as embankments, road bridges, protective features or beautifying features (Kangle, 1963).

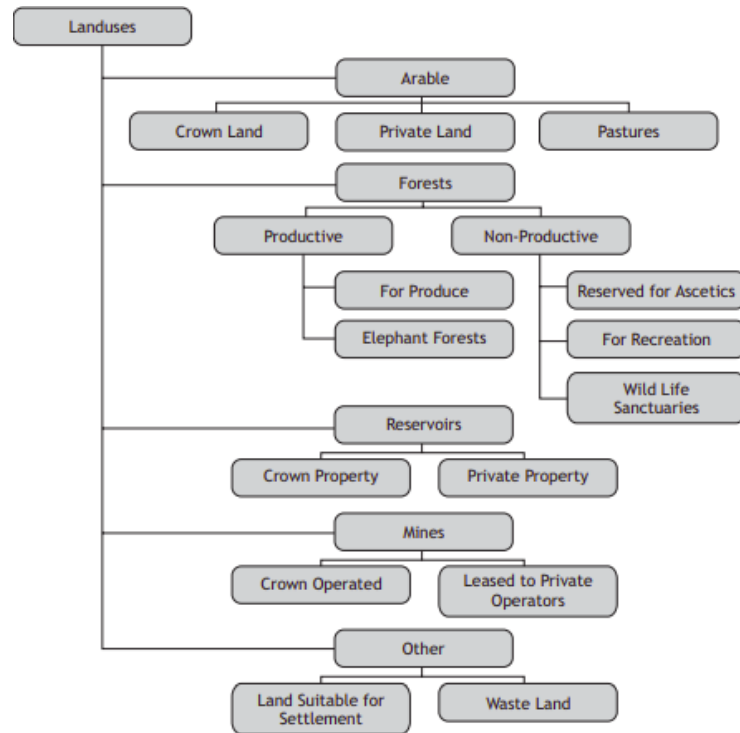


Figure 2-43: Classification of land uses according to the Arthaśāstra  
Source: Deshkar, 2010

Rural lands were to be continuously explored and settlements founded therein, with immigrations to rural areas being encouraged by the king by various measures (through easy loans of grains, cattle and money; the building of roads; the establishment of markets etc.), the most important of which was exemption from taxes for the period of settlement (Kangle, 1963). Foreigners and the residents of crowded urban centres were to be encouraged to move to these rural settlements. Lands with the following qualities were especially preferred: containing water, capable of raising two crops a year (especially

grains), with elephant forests and land trading routes. It could be said that the Arthaśāstra considers villages to primarily be centres for the production of food for cities (Smith J. S., 1976). They were to be populated mostly by peasants (Shudra castes) and foreigners (maybe migrants) and are implicitly subjected to political and economic exploitation by towns/cities. The population was required to be of at least of a hundred families but not including (and not exceeding) 5000 families of peasants (Shudras) (Dutt, 1925). The Arthaśāstra also recommends that no guilds other than local co-operative guilds, no salas or buildings for sports and plays, and no entertainers (such as bards, drummers and acrobats) should be permitted in the villages (Kangle, 1963). Villages were also often stratified and segregated on the basis of caste-and-class into self-sufficient 'unions' or 'collectives'. Some villages were also to contain Brahmasomāraṇyas (forested retreats for religious practices), Tapovanās (hermitages), Sētushus (lakes and reservoirs), Puṇyasthānas (holy places), orchards, paddy-fields etc. (Dutt B. B., 1925)

#### 2.3.3.4. Land Revenue and Taxation

The revenue from lands surveyed and allocated by the crown as well as the taxes due from each supervised profession (especially within capital cities and other urban settlements) are considered to be the main sources of revenue in the Arthaśāstra (Sharma S. K., 2012).

The king was to nominate a bureaucrat termed 'The Collector-General' who was to attend to the collection of revenues from the following (Sharma S. K., 2012, pp. 211-212):

1. forts (*durga*) :- this consisted of the revenues collected from the following
  - 1.1 tolls, fines, weightage and measures
  - 1.2 the town clerk (*nagaraka*), the superintendent of coinage (*kshara*)
  - 1.3 the superintendent of seals and passports
  - 1.4 liquor, slaughter of animals, threads
  - 1.5 oils, ghee, sugar (*lakshanadakyasha*)
  - 1.6 the state gold-smith (*sauvarnika*)
  - 1.7 the warehouse of merchandise
  - 1.8 the prostitutes, gambling
  - 1.9 building sites (*vāstuka*)
  - 1.10 the corporation of artisans and handicrafts men
  - 1.11 the superintendent of gods
  - 1.12 taxes collected from people living outside the gates (of the city) - Bahirikas
2. country parts (*rāshtra*)



- 2.1 produce from crown lands
- 2.2 portion of produce payable to the government (*bhāga*)
- 2.3 religious taxes (*bali*)
- 2.4 taxes paid in money by merchants
- 2.5 the superintendent of rivers, ferries, boats and ships, towns, pasture ground
- 2.6 road-cess (*vartane*)
- 2.7 ropes (*rajju*), and ropes to find these (*chorajju*)
3. mines (*khrai*)
4. buildings and gardens (*setu*)
  - 4.1 flower gardens
  - 4.2 fruit gardens
  - 4.3 vegetable gardens
  - 4.4 wet fields
  - 4.5 fields where crops are grown by sowing roots for seeds (i.e. sugar- cane crops, etc.)
5. forests (*vanam*)
6. herds of cattle (*vraja*), and
7. roads of traffic (*vanikpātha*)

The system of land taxation as well as the bureaucratic setup installed to ensure the efficiency of these systems (as described in the text) are considered to be far advanced for the Early Historic era (Sharma S. K., 2012) and the text continues to be studied for both its potential historical value as well as learnings for politics (Olivelle, 2013).

### 2.3.3.5. Vāstu, Setu, Vāstuka, Daivajna and Vardhaki

The key takeaways for understanding the practice of Vāstusāstra in the age of Kautilya are that buildings and gardens (*setu*) are considered separate from the building sites themselves (*vāstu*). This is an important distinction since the Arthashastra also makes a clear distinction between the profession of architecture, astrology and divination. Otter quotes the following passage from Kangle's translation of Kautilya's Arthashastra, verse 10.01.01, to illustrate the role of a *vastuka* in the choice of a site for locating a temporary military camp during a siege or a war; stressing the difference between the roles of an astrologer (*mauhurtika*), a carpenter (*vaddhaki*), a general/commandant (*nāyaka*) and the diviner/expert in the science of building sites (*vāstuka*) (Kangle, 1963) (Otter, 2011) :

*"On a site, approved by experts in the science of building, the commandant, carpenters and astrologers should cause the camp to be set up ...."*

### 2.3.3.6. Units and Metrology

The Arthashastra also defines the units found in later Vastusastra texts such as *angulas*, *vitasti*, *kishku*, *dhanus* and *hasta*. In fact, the text defines the unit '*kishku*' (equal to 42 *angulas*) which was attributed to use by sawyers and blacksmiths for measuring the grounds for forts, palaces, and the encampment of the army (Kangle, 1963). The text also defines the *garhapatya dhanus* (108 *angulas*) which is stated to be a measure used by carpenters (who are also called *grihapati*); this measure is used for measuring roads and fort-walls as per the text (Kangle, 1963). The *danda* (a measure mentioned often for large-scale measurements in the Vastusastra texts) is defined as being equal to 6 *kamsas* (or 192 *angulas*); which is used for measuring lands (which were usually lands gifted to *Brāhmans*, as *Brahmadeya*) (Kangle, 1963). It is of interest to find that the units used to measure the lands of Brahmins (the *rajju* and *danda*) are the primary units used for prescribing the measurements for urban planning in the later Vāstusāstra texts (such as the *Mānasāra* and the *Mayamata*), despite the mention of the more specialised and professional units of the *kishku* and the *garhapatya dhanus*.

### 2.3.3.7. Urban Design, Planning and Management

Kosambi considers that the general expansion of the Magadhan empire (of which Kautilya is considered to have been the chancellor in its early days) was fueled by the monopoly on metal and mining, conversion of frontier forests into farming settlements, and the induction of tribal groups into the caste-based hierarchies; which is stated to have enabled clear delimitations of territory and ease of enforcing taxation (Kosambi D. D., 1963).

Grhyādhipati (literally translated as 'Lord of houses and other similar') referred to the minister of the royal state who held the portfolio of planning and superintendence of the city (Dutt B. B., 1925). The responsibilities of this minister included the planning, construction, supervision and maintenance of (Dutt B. B., 1925):

1. Palaces, Defensive works (ditches, forts, parapets),
2. Water works (tanks, wells, reservoirs, pipes), and
3. Other works (statues, weapons, other engineering works)

The city superintendent's mandate included a daily inspection of the forts, fort-walls, roads, underground secret tunnels, water reservoirs and other important or defensive urban works (Dutt B. B., 1925).

The fortified city of populous centres is to be laid out in an island in the middle of a river, or at a mountainous cave or rocky tract; while the fortified city of inhabited wildernesses or frontier regions is to be laid out in barren waterless tracts or forests with

thickets and water (Rangarajan, 1992). The Arthaśāstra contains significant amount of prescriptions on the construction of parapets and other defence measures, the materials to be used for the same, their measurements, and the weapons to be provisioned therein (Rangarajan, 1992).

The city is to be laid out as a square fortified settlement of 4 gates facing cardinal directions with a grid of three roads each going north-south and east-west; with the royal palace (facing east or north) built to the north of the city's centre, and surrounded by the houses of the various officiants, occupations and classes of people (Rangarajan, 1992).

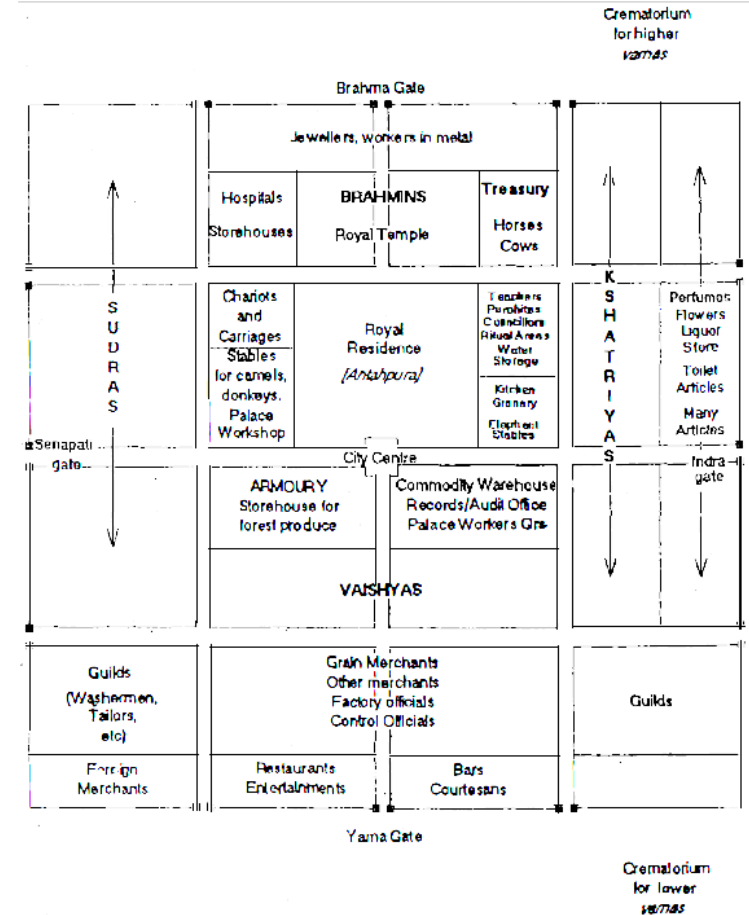


Figure 2-44: Illustration of the ideal fortified settlement plan as described by Kautilya in the Arthaśāstra

Source: L N Rangarajan, 1992

The temples to the deities Aparājita Apratihata Jayanta Vaijayanta (the 4 goddesses associated with cities and victories), Siva, Vaisravana (king of Yakshas and god of wealth), Ashvina (twins/divine physicians), and the honourable liquor-house (Sri-madiragriham – a debated component due to its implications), are to be situated in the centre of the city, while the Vāstudevata (translated as the gods of the grounds) are to be housed in the corners (Rangarajan, 1992).

Dutt notes that in Kautilya's scheme for the city, it is the streets and not the *vāstupadavinnyāsa* which determines the size and location of the neighbourhood blocks unlike conventional *Silpa Sāstrās* (Dutt B. B., 1925, p. 151). The measurements and regulations for town planning generally did not apply to the "satellite" or suburban villages that arose outside cities (such as the unplanned hamlets for the menial / artisan classes –potters, smiths, carpenters, workers etc.) (Ghosh A., *The City in Early Historical India*, 1973, p. 54).

The *Arthashastra* requires that there shall be at least one water-well for every ten houses (Dutt B. B., 1925, p. 151). The *Arthashastra* requires that the burial or cremation ground shall be situated either to the north or the east of the city with the heretics (followers of minority religions / atheists / outcastes) and the *Chandālas* shall live beyond the burial grounds (Dutt B. B., 1925, p. 151). The *Arthashastra*'s method of socio-spatial organization is followed in the *Mānasāra* and the *Mayamata* as well, with specific castes and occupations allotted certain locations in the city on similar bases, with all settlement templates unvariably prescribing norms for ramparts, temples and the socio-spatial location of the various castes (Ramaswamy, 2004).

### 2.3.3.8. Regional Planning

The *Arthashastra* also prescribes for the ideal planning of the region so as to be beneficial to the reign of the king, citing parameters such as the presence of mines, mountains and forests, as well as the locations of friendly and hostile states on the peripheries (Rangarajan, 1992). This is one of the earliest known regional planning document, idealized or actual, to be described in Early Historic Indian literature.

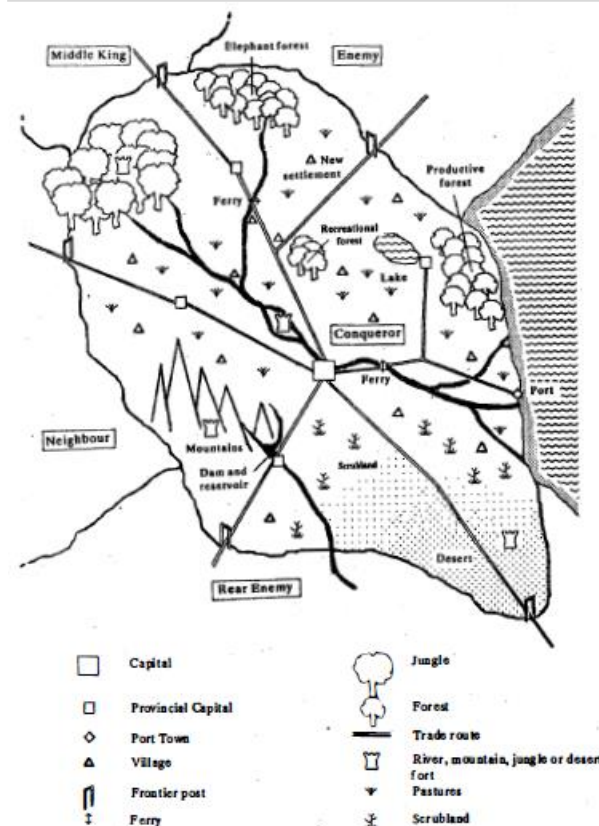


Figure 2-45: The ideal regions of a city-state as described by Kautilya in the *Arthashastra*

Source: L N Rangarajan, 1992

### 2.3.3.9. The 'Mandala' Concept

The '*mandala*' in the *Arthashastra* can be understood as a circle, and more particularly 'a circle of kings' consisting of an arrangement of states in concentric circles, whose central actor (the *Vijigishu* - king's (*rāja*) state) constituted the epicentre of international affairs (Set, 2015). This was one of the earliest popular uses of the term '*mandala*' which until then was used primarily to describe the collections of the books of the *Rig Veda* (Monier-Williams, 1990).

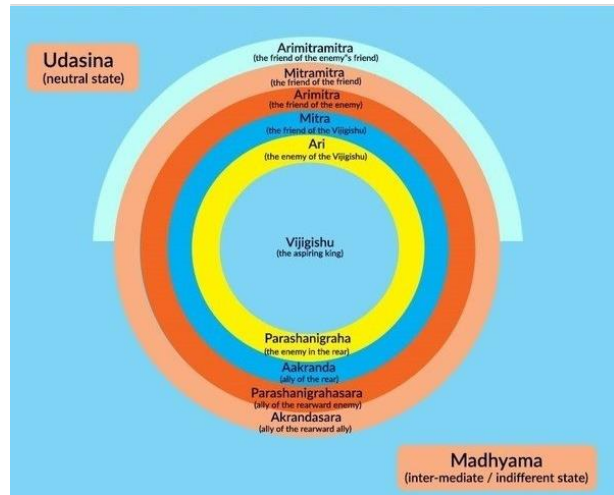


Figure 2-46: Depictions of Arthaśāstra's Mandala theory in popular literature  
Source: Soil Legion, 2020

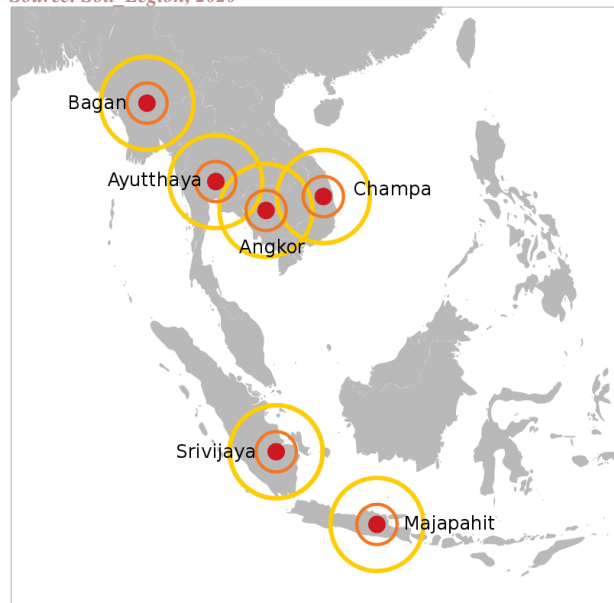


Figure 2-47: The main "mandalas" (political formations) of Southeast Asian history: Champa, Srivijaya, Khmer, Bagan, Majapahit, and Ayutthaya  
Source: Gunkarta, 2011

The popularity of this concept and its application in historic India and beyond is reflected in the adoption of the term by the Chola kings in the Early Medieval period, and the Indonesian polities of the Medieval eras. The largest territorial division in the Chola state was also called a mandalam, with the Chola state consisting of nine mandalams of which the cores were Chola-mandalam and Jayangondachola-mandalam (Karashima (ed.), 2014, p. 131). The term mandalam was also used as a designation of territory during the earlier Classical Age for the Chera, Chola, and Pandiya mandalams (Stein, 1977, p. 18).

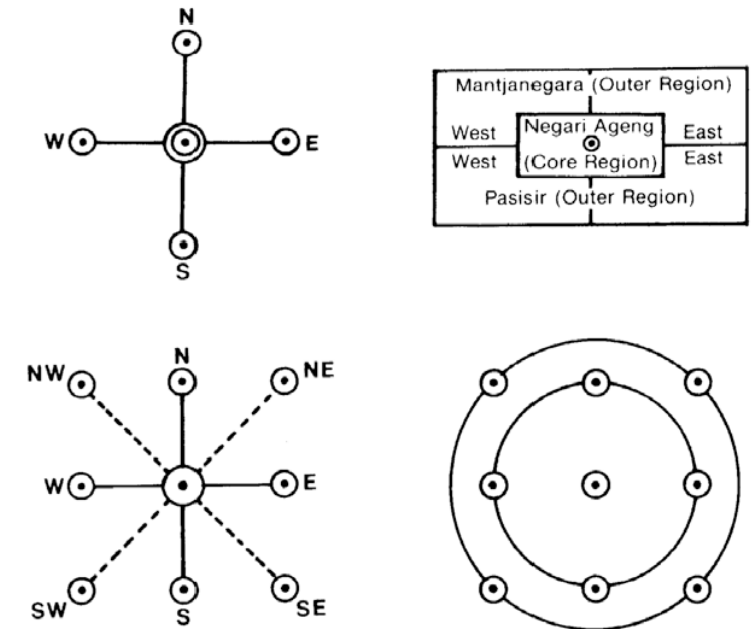


Figure 2-48: The mandala spatial schemes for selected Southeast Asian polities  
Upper left: The mantjapat. Upper right: The Mataram state—a five-unit system through successive bipartitions (after Schrieke 1955) Lower left: Nine-unit system, showing a radial pattern. Lower right: The king's council, showing two concentric circles  
Source: Tambiah, 1973

Reviews of Southeast Asian geopolitical literature shows the massive influence of the 'mandala' concept upon Southeastasian polities since the Early Historic period upto the current ages (Surpi, Avalokitesvari, & Untara, 2020). The application of the 'mandala' scheme of arrangements has been discussed by Tambiah in the context of spatial planning



in post-1000 CE Southeast Asian polities which principally followed Buddhism (Tambiah, 1973).

### 2.3.3.10. Land Grants (including Brahmadeya)

The Arthashastra contains one of the earliest descriptions of the practice of granting lands to specific classes or groups of people; wherein land is prescribed to be granted to the various Brahmins (teachers, purohitas, experts in the Vedas and officiants at ritual sacrifices) (also known as Brahmadeya), heads of departments (accounts, recprds, divisions, doctors, equiries etc.) etc. (Rangarajan, 1992). Such lands are to be exempt from fines and taxes, transferable to heirs but not valid for sale or mortgage by the possessor.

### 2.3.4. Brihat Samhita

Brihat Samhita, literally the 'great compilation', is a literary work primarily on divination by the 6<sup>th</sup> century astrologer Varāhamihira (who was well-versed in Greco-Roman and Babylonian astrology-astronomy) around the areas of modern-day Ujjain in Madhya Pradesh (Iyer, 1884). Varāhamihira's (505 CE – 587 CE) Brihat Samhita was an encyclopedic work also covering some information and prescriptions for architecture (Vāstuvidyā), temple-building (prāsāda-lakṣaṇa), temple idols (pratimā-lakṣaṇa), installation of idols (pratimā-pratiṣṭhāpana), planetary motions, eclipses, timekeeping, astrology, seasons, cloud formations, rainfall, agriculture, mathematics, gemology, making of perfumes etc. (Iyer, 1884). It is one of the earliest verifiably datable post-500 CE texts to provide the following (Iyer, 1884):

1. Rules of vastuvidya in the form of ratios and measurements
2. Vāstupuruṣamaṇḍala as a spatial device
3. Description of the marmasthalas (vital points) on the site's body
4. Classifications of temples
5. Legend of the birth and subjugation of the Vāstupuruṣa
6. Rules of iconometry and installation

The Brihat Samhita is thus, one of the earliest and most comprehensive post-500 CE texts on architecture and Vāstuvidyā (despite the author mentioning that it was derived from other older and more technical authors on Vāstuśāstra). The text also prescribes on the design of lamps, umbrellas, chowires, couches, thrones, seats, crowns, swords etc. (Iyer, 1884). The text is considered contemporaneous to the Matsya Purāṇa, but compiled over a shorter period of time as compared to the Purāṇa (Bhattacharya T. , 1947).

1	2	3	4	5	6	7	8	9
10	11	12	13	14	15	16	17	18
19	20	21	22	23	24	25	26	27
28	29	30	31	32	33	34	35	36
37	38	39	40	41	42	43	44	45
46	47	48	49	50	51	52	53	54
55	56	57	58	59	60	61	62	63
64	65	66	67	68	69	70	71	72
73	74	75	76	77	78	79	80	81

Figure 2-49: 9x9 Vāstupuruṣamaṇḍala as described in the Brihat Samhita  
Source: Iyer, 1884

The two types of mandalas described in the Brihat Samhita are the 9x9 (81) square mandala and the 8x8 (64) square mandala, both of which are prescribed for houses as well as other applications (Iyer, 1884). This differs from the usual prescriptions of Vāstuśāstra which recommends the even-sided squares for temples (due to the absence of the brahmasthāna at the centre) and the odd-sided squares for other built structures (due to the formation of a brahmasthāna at the centre) (Ambatkar, 1999). The differences between the mandala as described in the Brihat Samhita and the Pauśkara Samhita are covered by Apte and Supekar in their review of the two texts, with the differences being attributed to the development of the domain of Vāstuvidyā and its novel application to temples, houses and other parts of the built environment (Apte & Supekar, 1983). The text also captures the developing concept of the Vāstupuruṣa's marmasthanas, siras etc. which are mapped onto the mandala, on which points construction or loads were not to be introduced. The text does not describe settlement planning or other allied topics.

### 2.3.5. Samarāṅgaṇa Sūtradhāra

The Samarāṅgaṇa Sūtradhāra, literally the ‘stage manager for battlefields’ (taken as an epithet for its attributed composer (Salvini, 2012)) or alternately as ‘architect of human dwellings’, is an 11th-century Sanskrit verse treatise on Vāstusāstra (understood here as classical Indian architecture) attributed to the Paramāra King Bhoja (r. 1010 CE – 1055 CE) of Dhar (Sanderson, 2012). The text is connected to historical evidences such as the massive but unfinished Bhojpur temple (Deshpande, 1983) and the line drawings abandoned by the workers at the site of the unfinished temple (Hardy, 2015). The text is observed to contain ‘repetitive but incomplete’ instructions for scholars or builders intending to use the text as a manual for building (Salvini, 2012), with similar or repeating instructions for similar building types or components occurring throughout the text under different chapters (Acharya P. K., 1946, pp. 178-181); leading to the complaint that the book was not truly an instructional manual since ‘one cannot read the book and then build a temple’ (Salvini, 2012, p. 43). Salvini further notes that the text requires both continuous exposure to contemporary building techniques, local material cultures and continuous cross-referencing in order to be applicable during building construction; which even the text (31.87) acknowledges as “*Connection to a traditional lineage, skill, direct instructions, Practice of the shastra, exertion in the activities of Vastu, and intelligence...*” (Salvini, 2012, p. 42).

#### 2.3.5.1. Authorship of the Samarāṅgaṇa Sūtradhāra

The text, though attributed to as being one among the 84 books composed by the king Bhojadeva of the Paramara dynasty, could be possibly be authored by the scholar(s) at the “centre for Sanskrit studies” (Dhaky, 1996), popularly known as the ‘Bhojaśālā’ or the ‘Sarasvati-sadana’ that the king reportedly instituted around 1035 CE (Willis, 2012 (2018)). The case for composition by one of the king’s resident scholars is made by Ganguly (Ganguly, 1930), while Munshi considers it possible that the king himself may have been personally involved in the texts (Munshi, 1959). The case is made for the systematisation and updating of all the Śāstras under king Bhojadeva by the scholars and writers attending his court (Munshi, 1959, p. 10). An alternate proposal considering the extended composition of the text over centuries by Brahman specialists in consultation with technical specialists under royal patronage is also considered by Hardy (Michell, 2018) due to the text’s amalgamated and technical descriptions (Hardy, 2009) and by Otter due to the text’s inconsistencies and possibly interpolated nature of some verses (Otter, 2010).

**Table 2-6: List of some of the books attributed to Rajabhojadeva of the Paramara dynasty**  
(Source: Mahesh Singh in (Singh M., 1984) as quoted in (Sharma S. K., 2007))

Domain	Texts
Anthology	Subhasita Prabandha
<b>Architecture / Arts</b>	<b>Samarāṅgaṇa Sūtradhāra (~1050 CE)</b>
Astronomy / Astrology	Aditya Pratapa Siddhanta Bhujabalabhīma Rajamartanda Vidvajnavallabha (Prasna Vijnana)
Law / Polity	Bhujabula (Nibandha) Bhupala Paddhati Bhupala Samuccaya or Kṛtyasamuccaya Canakyanitiḥ or Dandanitiḥ Vyavahara Samuccaya Purtamartanda Rajamartanda Rajaniṭiḥ Vyavahara-Manjari Yuktikalpataru
Grammar / Linguistics	Sabdanusasana Sarasvati Kanthabharana
Lexicography	Namamalika
Medicine	Ayurveda Sarvasva Rajamartanda or Yogasara Samgraha Rajamrgarika Salihotra Visranta Vidyavinoda Cārucārya Rajamrganka (Karna)
Music	Sangita Prakasa
Philosophy / Religion	Rajamartanda - a commentary on Patanjali's Yoga Sutra Rajamartanda (Vedanta) Siddhanta Samgraha Siddhanta Sara Paddhati Tattva Prakasa or Siva tattva Prakasika Siva Tattva Ratnakalika
Prakṛta poetry	Kurmastaka (2 volumes) Kodanda-Kavya
Sanskrit Poetry / Prose	Sringara Prakasa Campuramayana Mahakalivijaya Srngara Manjari Vidyavinoda



Figure 2-50: Bhojashala/Kamal Maula mosque in Dhar  
Source: Singh, N.; 2019

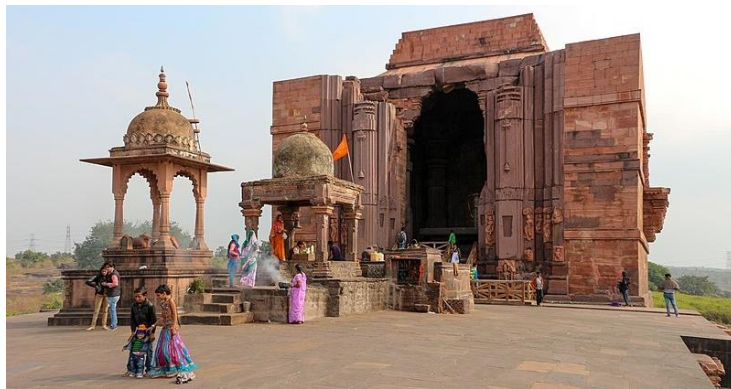


Figure 2-51: The Bhojeshvar temple at Bhojpur  
Source: Bernard Gagnon, 2013



Figure 2-52: Architectural drawings engraved in the rocks surrounding the Bhojeshvar temple, for use by the artisans  
Source: G41rn8, 2001

### 2.3.5.2. Pioneering The Genre

The text was one of the earliest extant texts to assert itself as describing Vāstuśāstra (as opposed to the vastuvidya described in the preceding Matsya Purāṇa and Brihat Samhita), with the other texts (such as the Mānasāra and the Mayamata) following in its wake. Shukla observes that the text was an original in the sense that it was the first complete text that described/prescribed ‘civil architecture’ exhaustively (Shukla D. S., 1958, p. 143), which is countered by Otter on the basis that many of the portions of the Samarāṅgasutradhāra which prescribes on civil architecture has precedents for terms and meanings in the preceding texts of the Brihat Samhita, the Matsya Purana, and the Viśvakarmaprakāśa (Otter, 2010, p. 4). Salvini considers that many of the terms and style of description in the Samarāṅgaṇa Sūtradhāra are heavily dependent on the Purāṇas; for example, the chapter on temple architecture being similar to the prescriptions on prāsāda-lakṣaṇam found in the Agni Purāṇa (Salvini, 2012, p. 37) which is itself dependant on the Hayaśiṛṣa Pāñcarātra for its contents (Raddock, 2011). The text is even composed in the manner of a Purāṇa, beginning with a description of cosmogenesis, followed by the setting of the questioning of Viśvakarmā by Jaya to understand architecture better etc. (Salvini, 2012). The text inspired and guided the composition of a number of later texts such as the Aparājita-prēcchā (Dhaky, 1996), the Rājavallabhamāṇḍana (Desai, 2012), the Īśānaśivagurudevapaddhati (Yano, 1986) etc.

### 2.3.5.3. Contents

The text has 83 chapters (*adhyāya*) consisting of 7,340 verses in Sanskrit metrical verses (mostly *anustubh* but concluding with longer metres such as *upajāti* or *vasantirīlakā* (Otter, 2010). The initial chapters deal with cosmogony and other legends with some chapters even discussing Hindu philosophies such as Samkhya and Vedanta.

The 9<sup>th</sup> chapter of the text (Ashtāṅga-lakṣaṇam) describes briefly the planning of four kinds of forts, the 10<sup>th</sup> chapter (Bhūmi-Parīkṣā) describing the surveying and selection of sites and soils for various kinds of settlements and castes, the chapters 11-15 discussing the types of Vāstumaṇḍalas, chapter 17 enumerating and describing the classification and categories of towns and their components, chapter 18 dealing with the essentials of planning a town (Pura-Niveśa) such as the battlements, gates, temples, roads and towers, alongwith the allocation of the different parts of the site to different castes and occupations (Kumar (ed.), 1998). The chapters 52–67 deal with the theory and practice of Hindu temple architecture (mostly pertaining to north, central and western India), with the last few chapters (70-83) being on sculpture and painting, with 21 chapters being on residential architecture and a few chapters being dedicated to

automatons, machines, fountains etc. (Hardy, 2015). The text is considered to be comparatively scant in its theorization for the Vāstupuruṣa and the Vāstupuruṣamaṇḍala, with Hardy contesting that the Vastupurusa is not mentioned even once in its sections on temple architecture (Salvini, 2012). In general, the text is not rigorous in its definitions and descriptions, with Hardy observing that (Hardy, 2009):

*“... the term for a given element may vary not only from chapter to chapter, but almost from verse to verse, often giving the impression that elegant linguistic variation is more important than precision, that from time to time the reader is treated to riddles, and above all that meanings are conveyed as much by the contexts of words as by the actual words used.”*

#### 2.3.5.4. Urban Planning and Design

The text describes three categories of settlements – Pura (town), Grāma (village) and Kheṭa (similar to suburb); the primary differences between them are expressed by the relative measurement of the Viṣkambha (the Kheṭa can be half the town's Viṣkambha, while the Grāma can be half that of the Kheṭa), and the Sīmā distances of these settlements (Shukla D. S., 1958, p. 251). The text prescribes the sizes of towns through the unit *capas* (as compared to *dandas* in the Mayamata and Mānasāra) and often set against the Viṣaya or Janapada (region or state) to bring out the distinction (Shukla D. S., 1958, p. 251). The 17<sup>th</sup> chapter defines the various categories of towns in the following manner (Shukla D. S., 1958, p. 252):

1. Pura – capital and town proper
2. Śākhānagara – other towns
  - a. Karvata - Smaller town
  - b. Nigama – smaller than Karvata
  - c. Grāma – smaller than Nigama
3. Special towns
  - a. Pattana – the second residence of the king
  - b. Putabhedana – a Pattana as well as a commercial centre
4. Kheṭa
5. Villages
  - a. Grāma
  - b. Pallī - Forest-edge habitations
  - c. Pallikā – Settlements on the outskirts of villages and towns

The definitions and descriptions of the Samarāṅgaṇa Sūtradhāra are thus terse in both quantity and quality as compared to the later Vāstuśāstra texts such as the Mānasāra

or the Aparājītaprecchā, which develop these concepts further to include parameters such as shape of settlement, demographics, nature of economy etc. to define and describe the types of settlements (Shukla D. S., 1958, p. 253ff). All these texts, including the Samarāṅgaṇa Sūtradhāra, develop further on the typology and types prescribed in the Arthaśāstra.

#### 2.3.6. Mayamata / Mayasamgraha

The Mayamata is a Sanskrit text consisting of about 3300 verses (mostly in the *anustubh* metre) in 36 chapters on the subject of Vāstuśāstra, composed in Southern India after the 10<sup>th</sup> century CE; which describes architecture, town planning, iconometry, furniture design and more, as part of an encyclopaedic structure (Dagens, 2007).

##### 2.3.6.1. Influences and Connections

The text is unique for its striking resemblance and demonstrable influence on a number of texts within the Śaiva Saiddhāntika corpus as well as general Vāstuśāstra literature:

1. the Śaiva Āgama text Pūrvakāmikāgama, contains vast sections of verses with virtually identical text and prescriptions (Dagens, 2007, p. xi);
2. the Śaiva Saiddhāntika *paddhati* text Īśānaśivagurudevapaddhati quotes frequently from it (Unni, 2006)
3. the Rājavalabhamaṇḍana (a post-1200 CE Northwestern Vāstuśāstra text) consults the text for prescriptions on Drāviḍa temple architecture (Desai, 2012)
4. the Śilparatna (a 16<sup>th</sup> century South Indian text on the arts by Sri Kumara) borrows heavily from it (Dagens, 2007, p. xliv)

##### 2.3.6.2. Dimensions and Āyādi Formulae

The dimensions are primarily given in the units of *dandas* (literally ‘poles’), with a system of *rajjus* (8 dandas), *krośas* (500 dandas) and so on until the most frequent large unit of the *yojana* (8000 dandas) (Dagens, 2007). This base is important to establish, since the texts prescribe very specific combinations of dimensions for the length and breadth of a settlement, calculated on the basis of 6 formulae known as the ‘Āyādi’ formulae or the ‘Āyādishatvarga’; these formulae are taken to provide the net gains and losses to the settlement due to its length and breadth in numbers (Dagens, 2007, p. 63). Sachdev considers it possible for the future of a city or a town to be thus knowable, given that the dimensions of the city, its date and time of founding, and the name and horoscope of its patron are known (Sachdev & Tillotson, Building Jaipur: The Making of an Indian City, 2002) (Sachdev, 2000).



### 2.3.6.3. Settlement Planning

The 9<sup>th</sup> and 10<sup>th</sup> chapters of the text contain the prescriptions concerning the laying out of villages and towns, wherein the different types are distinguished mostly by:

1. Number, orientation and types of streets in the settlement
2. Allocation of regions to classes and castes
3. Location, orientation and deities of temples within and beyond the settlement

The distinction between rural and urban settlements is vague, and the Mayamata distinguishes between the familiar settlement types as follows (Dagens, 2007, p. 67):

1. Mangala: Settlement of Brahmins only
2. Pura: Settlement inhabited by merchants and princes
3. Grama: Settlements inhabited by people of the world, other than the above
4. Matha: Places where ascetics dwell

The Manasara and the Mayamata prescribe the following sequential processes for the laying out of towns and villages (Vyas, 2001) (Shastri & Gadre, 1990):

1. **Bhu-pariksha** - Examination of soil
2. **Bhumi-samgraha** - Selection of site
3. **Dikapariccheda** - Determination of directions
4. **Padavinyasa** - Division of the grounds into grid-based sub-units “*padas*”
5. **Balikarmavidhana** - Offerings to deities and beings (balikarmavidhana)
6. **Gramavinyasa** - Planning of villages
7. **Nagaravinyasa** – The planning of towns
8. **Bhumividhana** - Building and their different stories
9. **Gopuravidhana** - Construction of gateways
10. **Mandapavidhana** - Construction of temples
11. **Rajaveshmavidhana** - Construction of royal palaces

### 2.3.6.4. Village Plans or Templates

The 8 different types of templates/plans for settlements prescribed in the text are:

1. Dandaka
2. Svastika
3. Prastara
4. Prakīrnaka
5. Nandyāvarta
6. Paraga
7. Padma
8. Śripratiṣṭhā

Table 2-7: East-West and North-South street matrix in the templates for village types  
Source: Dagens, 2007

Parameter Settlement	Number of East-West roads	Number of North-South roads
Dandaka	1	1
Svastika	3(?)	3(?)
Prastara	3	3, 4, 5, 6, 7
Prakīrnaka	4	8, 9, 10, 11, 12
Nandyāvarta	5	13, 14, 15, 16, 17
Paraga	6	18, 19, 20, 21, 22
Padma	7	23, 24, 25, 26, 27
Śripratiṣṭhā	8	28-32

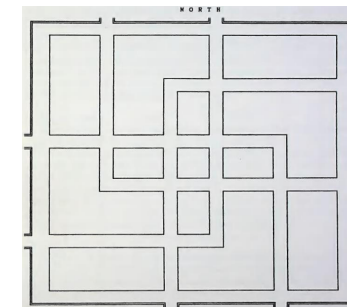


Figure 2-53: Plan of the Svastika village as described in the Mayamata  
Source: Dagens, 2007

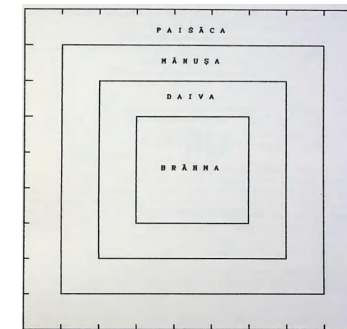


Figure 2-54: The three concentric Padas for a settlement according to the Mayamata  
Source: Dagens, 2007

The contemporary editions of the Mayamata are comparatively less illustrated than the Manasara, and depend more on textual exegesis.

#### 2.3.6.5. Foundation Deposits

The process and variations in the deposit of objects and icons in the foundation of the settlement at its initiation is also elaborated upon. The Mayamata in this context mentions the 'Aṣṭamaṅgala' again, which here consists of – mirror (darpana), vase of plenty (Pūrṇakumbha), bull (vrishabha), double fly whisk (Cāmara), Śrīvatsa, svastika, conch (Śaṅkha), and lamp (Dīpa) (Dagens, 2007, p. 129). This list is very similar to that of the Aṣṭamaṅgala prescribed for the adornments of a crown in the Manasara, with the notable difference being the substitution of the 'bull' for the 'umbrella' (chatra) in the Manasara (Acharya P. K., 1933, p. 492). Five of the eight Aṣṭamaṅgala in the Mayamata's tradition are similar to the Theravada Buddhist traditions of the Aṣṭamaṅgala, while four of the eight are similar to the Digambara Jaina traditions of the Aṣṭamaṅgala; thus, the possibilities of exposure to these iconographic traditions by the compilers is posited.

#### 2.3.6.6. Other Prescriptions

The royal palace, according to Mayamuni, should occupy an eastern site or the quarters of Apa and the royal buildings should on the whole extend over one-seventh of the entire city. The Mayamatam requires shops to be interspersed with residences for regular villages and towns; but ports or commercial emporiums are recommended to have continuous rows of shops on either sides of the major roads or highways.

lie in the (respectively) is text composed of around mentions multiple instances of the segregation of society based on their socio-cultural standing (usually based on occupations followed by the group) into specific physical relationships with the built urban form (Dutt B. B., 1925). Dutt further states that "*Padavinyasa*" (the mandala-based grid layout process) determined the allocation of specific sub-units of the urban grid "*padas*" (neighbourhood blocks defined by size, presiding diety and directions) to pre-determined professions and castes of the citizens (Dutt B. B., 1925). Dutt has found statements in the Mayamata that noticed the establishment of *chandalas* (sanitary workers) and washermen to about two hundred *dandas* to the east or the south-east of the city (Dutt B. B., 1925). The fortified satellite settlement of Babarkhana (Kaccha Kot) near the ancient city of Taxila is reported to have accommodated the class that pursued menial professions (Dutt B. B., 1925). Even the famed planner Patrick Geddes has observed the relegation of the "lower and poorer castes" to the south and east of the walled temple city of Srirangam (Dutt B. B., 1925).

The Mayamatam requires shops to be interspersed with residences for regular villages and towns; but ports or commercial emporiums are recommended to have continuous rows of shops on either sides of the major roads or highways (Dagens, 2007).

The royal palace, according to Mayamuni, should occupy an eastern site or the quarters of Apa and the royal buildings on the whole extend over one-seventh of the entire city (Dagens, 2007).

Mayamata recommends the extension of cities to the east and/or the south; with the third option being extension in all directions (Dutt B. B., 1925). Extensions to the south and west are considered as inauspicious by the Mayamata's injunctions (Shastri & Gadre, 1990). These beliefs on extension bodes ill especially for the otherwise well-planned city of Jaipur.

### 2.3.7. Mānasāra

The Mānasāra (literally “essence of measurement” or “system of proportion”) is a Sanskrit metrical treatise that prescribes detailed guidelines on the building of Hindu temples, sculptures, houses, gardens, water tanks, laying out of towns and some other such subjects, in about 10,000 shlokas (verses) in 70 adhyayas (chapters) as a single text (Acharya P. K., 1933).

#### 2.3.7.1. Dating

The date of the text was under debate since the author (P K Acharya) dated the work to approximately the Gupta-era (c. 500 CE) and considered it as the fundamental text for all ancient Hindu architecture, and asserted its position as the de facto Indian equivalent of Vitruvius’ De Architectura (Otter, 2009). Yet, multiple researchers have now considered a period ranging from post-1000 CE to 1500 CE as the possible period of compilation of the text; citing various reasons such as its ‘completeness’, the reference to 16 storey temple towers (gopurams) etc. as being indicative of the text being a late compilation (Desai, 2012) or a late ‘recension of recensions’ of an early text (Bhattacharya T., 2006).

#### 2.3.7.2. Context

The Mānasāra is understood to be a treatise that primarily describes South Indian architecture and is taken to be connected to the Indian Medieval period (especially the age of the Chola Empire) which saw the Golden Period of South Indian temple-building (Srivathsan, 1995) and it has some similarities in style and prescriptions to the other fundamental South Indian Vāstuśāstra text – the Mayamata (Dagens, 2007), though the Mayamata is taken to be the earlier compilation. The text was considered difficult to interpret because of their “barbarous” Sanskrit (Acharya P. K., 1933, p. 6Aff), which Acharya offers as proof for the composition of the text by the craftsmen themselves.

#### 2.3.7.3. Ideology of Modern Versions

The notes on the ‘Revivalist’ tendencies of the modern authors, such as Acharya, has been commented upon by researchers (Otter, 2009) who note that the ahistorical ascription of antiquity and technologies to the

#### 2.3.7.4. Illustrations

Contemporary reviews of the illustrations and diagrams of the Mānasāra reveals that they were “not based on ancient remains or existing structures” (Hargreaves, 1935, p. 778) (Otter, 2009) and were created with the help of a Silpin K. S. Siddhalinga Swamy and a Sanskrit-trained architect S. C. Mukherji (Hargreaves, 1935, p. 778); an observation

that is similar to that made about Ram Raz’s work (Desai, 2012) (Srivathsan, 1995). Thus, the validity of the inferences that can be drawn by analysing these illustrations is dependent on the fidelity of the interpretation in Acharya’s and Ram Raz’s works, which has also been questioned by many researchers familiar with these building traditions (Srivathsan, 1995) (Hardy, 2001) (Otter, 2009) (Desai, 2012).

#### 2.3.7.5. Types of Cities/Towns

Towns are also divided into eight classes:

1. Rājadhāni
2. Nagara
3. Pura
4. Nagari
5. Kheta
6. Kharvaṭa
7. Kubjaka
8. Pattana

#### 2.3.7.6. Types of Forts

The types of forts in the Manasara are classified in more detail than the other settlement types and consist of three kinds of classifications:

- 1) According to the size and the object
- 2) According to their situation/location
- 3) According to their location with respect to the mountain

The first classification provides the following kinds of forts:

1. Sibira
2. Vāhinimukha
3. Sthāniya
4. Dronaka
5. Samviddha or vardhaka
6. Kolaka
7. Nigama
8. Skandhāvāra

The second classification classes the forts as:

1. mountain fort
2. water fort
3. chariot fort
4. divine fort

5. clay fort
6. mixed fort

The mountain fort is further subdivided into:

1. Fort on the mountaintop
2. Fort in the valley
3. Fort on the mountain's slopes

### 2.3.7.7. Epistemology of Urban and Martial Planning

The Manasara's description of the various sub-types of forts and cities and towns are non-technical (in the sense that they do not enable planning or architectural differences) and are often non-exclusive (thus the same definitions could apply to many other named types of towns or citieforts); some examples being the definitions for:

1. Drona and Skandhāvāra (types of forts)
2. Sena (or Vāhinimukha) and Kolaka
3. Pattana and Kheta (types of towns)
4. Rājadhāni and Nagari (types of towns)

Ram Raz, in his essay, does not consider these descriptions and definitions to be of architectural interest and comments thus (Raz, 1834, p. 47):

*"The next chapter professes to describe nagaras or cities; but as it contains nothing farther than an enumeration of several sorts of cities and the various titles of particular princes who are qualified to reside in them, I shall omit it altogether."*

In fact, forts and towns were considered to be practically the same by the composers of the Manasara (Acharya P. K., 1933, p. 95), with the chief architectural difference possibly being the level of fortifications (which could be as simple as the presence / absence of ramparts/gates). The chief distinguishing factors were the breadths of these towns and forts which depended on the class of the kings ruling them (Acharya P. K., 1933, pp. 93-95). The planning of these settlements were to follow the processes and templates of the villages, and the architect's discretion was to be employed to make decisions regarding the same (Acharya P. K., 1933, p. 98).

The majority of terms used in these lists were derived from the typologies followed in the Arthashastra and the later Sanskrit texts; whose conflation of terms and definitions regarding settlements (Basant, 2017) is reflected in the conflations engaged in by the Mānasāra and other Vāstuśāstra texts. The source for these classifications as per the Mānasāra are the 'Tantra' (Acharya P. K., 1933, p. 93ff), which supports the positions developed by this research that the Tantra texts (such as the Mantramārga Pratiṣṭhāntas

and the Hayaśīrṣa Pāñcarātra) were the precedents for the development of the later Vāstuśāstra texts.

### 2.3.7.8. Types of Plans for Villages

The plan of villages in the Mānasāra are prescribed according to eight types called:

1. Dandaka
2. Sarvatobhadra
3. Nandyāvarta
4. Padmaka
5. Svastika
6. Prastara
7. Kārmuka
8. Chaturmukha

The eight types described in the text are differentiable primarily based on the shape of their street layouts and the specific spatial allocations of castes within the settlement. These eight types are interpreted and illustrated by Acharya, Raz, Havell and other authors to provide an approximate rendering of the prescribed plan for the settlement, based on the prescriptions given for street layouts, locations of temples, tanks, gates etc., as demonstrated through the following diagrams.



## 2.3.7.8.1. Dandaka scheme

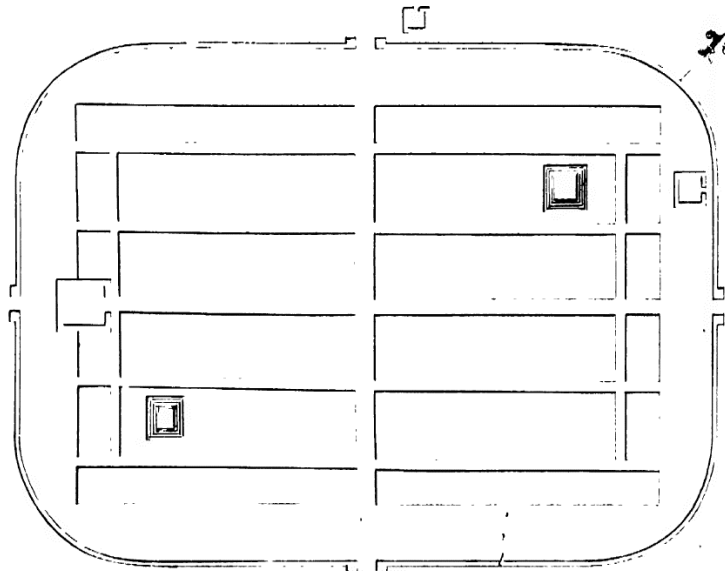


Figure 2-55: Dandaka plan as interpreted by Ram Raz  
Source: Raz, 1834

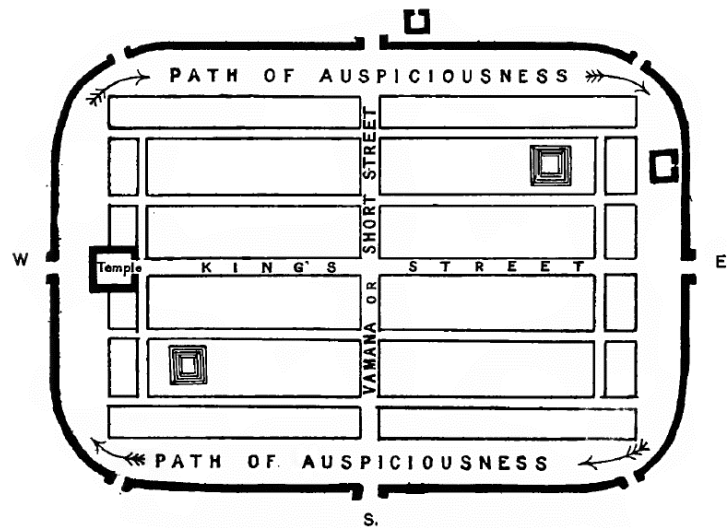


Figure 2-56: Dandaka scheme as interpreted by E. B. Havell

Source: Havell, 1915

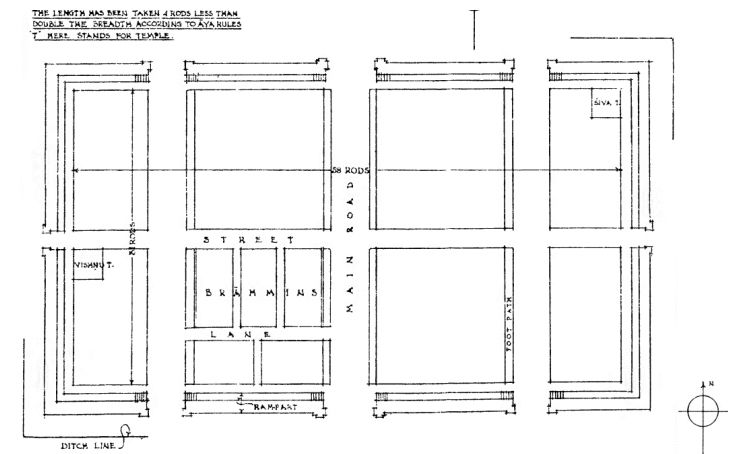


Figure 2-57: Dandaka scheme as interpreted by S. C. Mukherji  
Source: Acharya, 1933

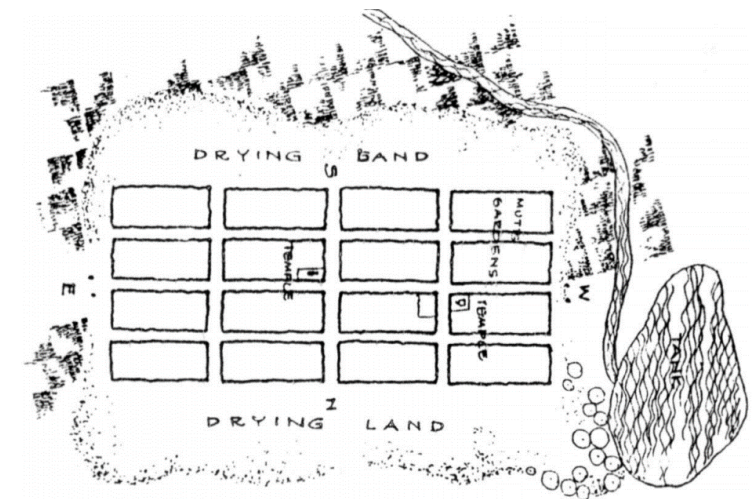
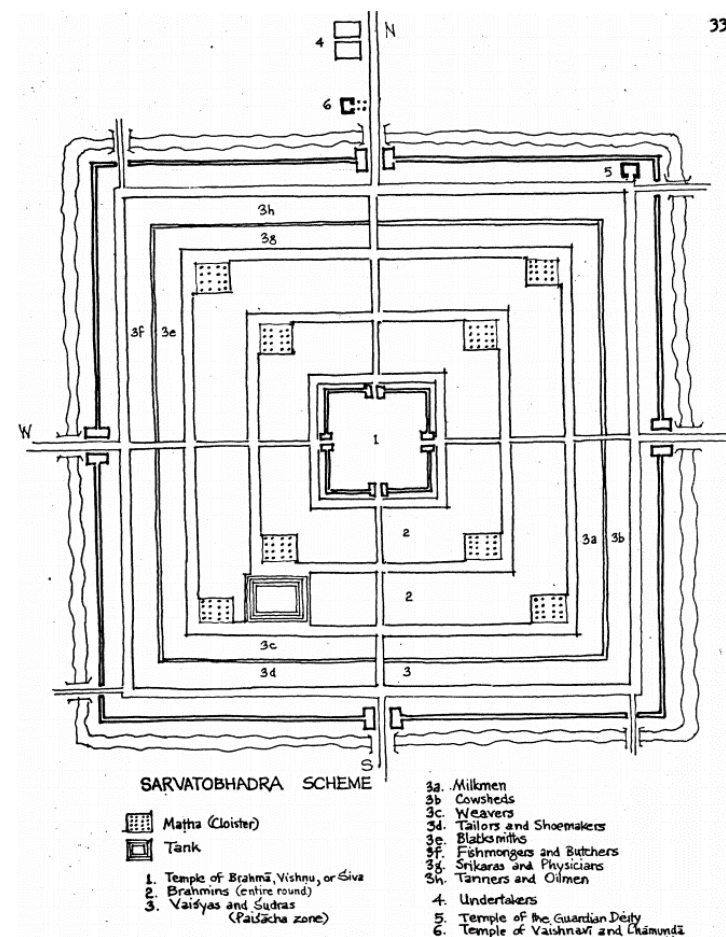
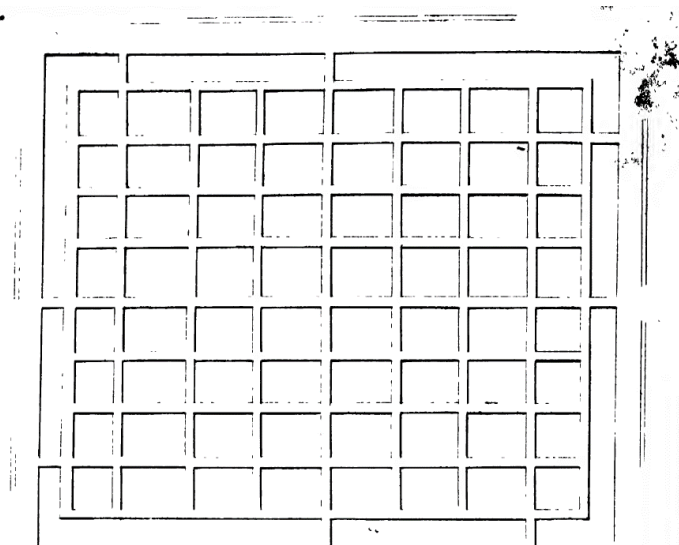
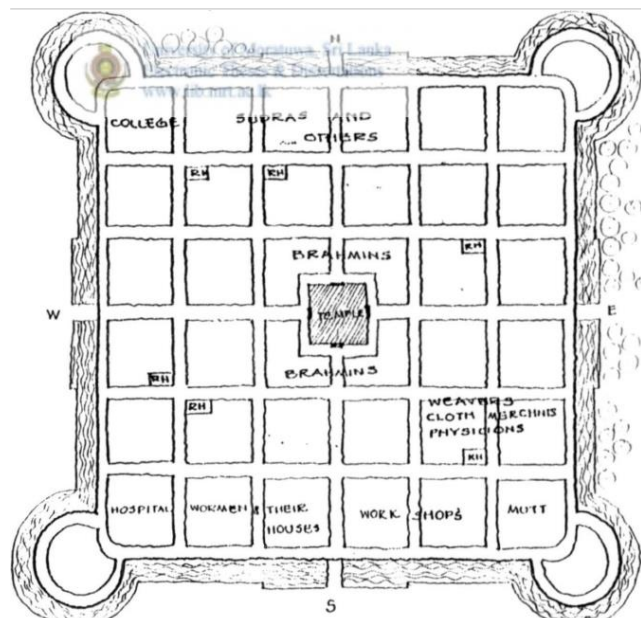
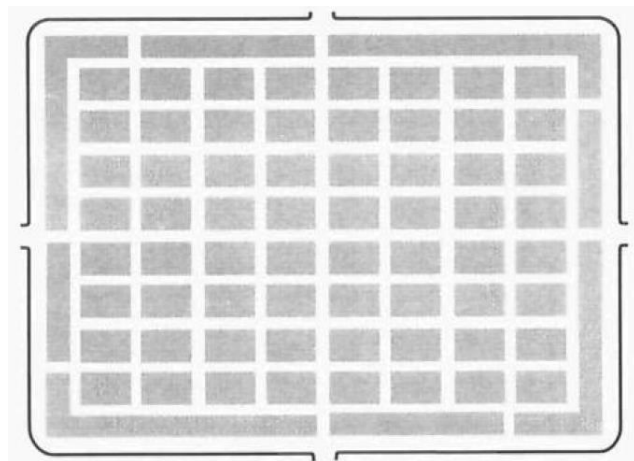


Figure 2-58: Dandaka scheme as interpreted by Fonseka  
Source: Fonseka, 1997



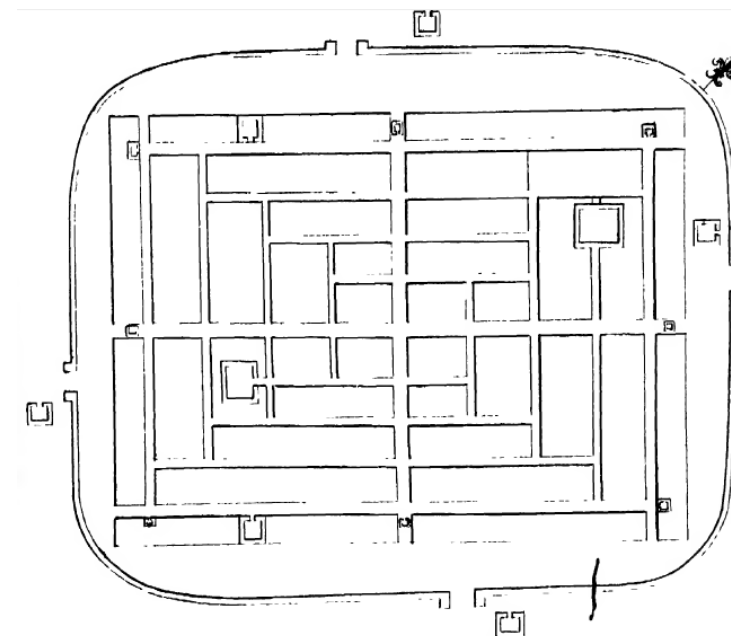


*Figure 2-62: Sarvatobhadra scheme as interpreted by Fonseca*  
*Source: Fonseca, 1997*

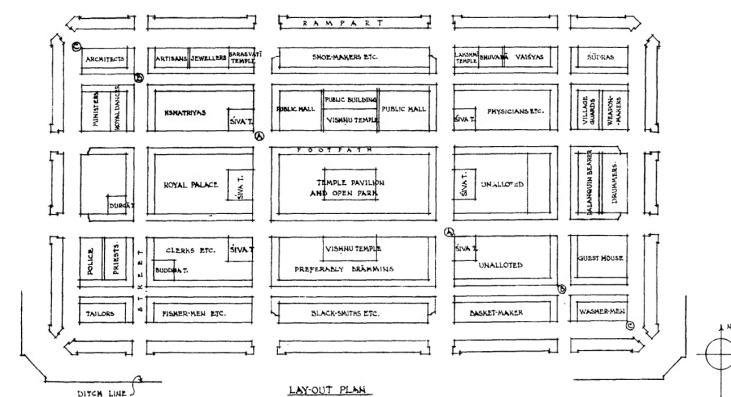


*Figure 2-63: Sarvatobhadra scheme as interpreted by Sinha*  
*Source: Sinha, 1998*

### 2.3.7.8.3. Nandyavarta scheme

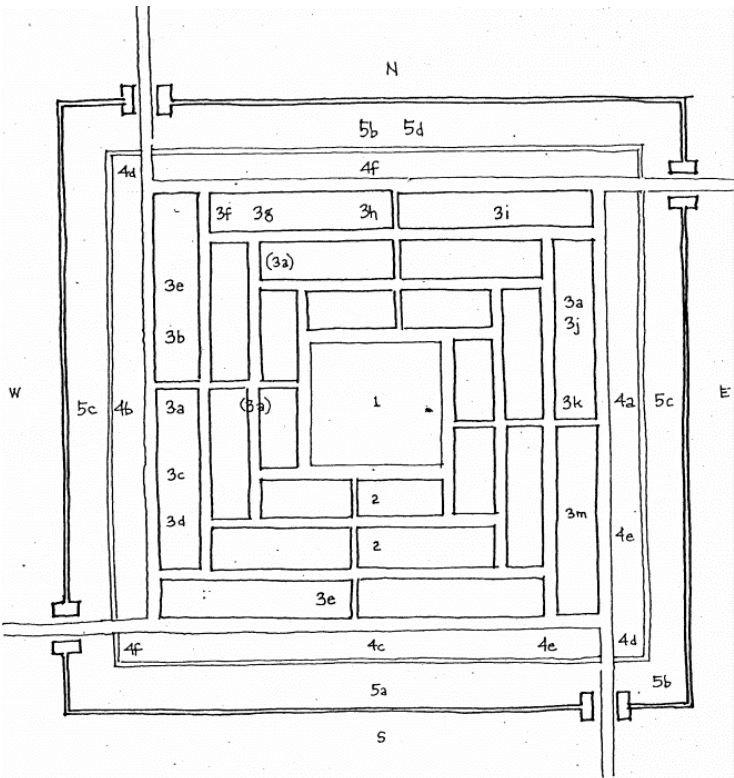


*Figure 2-64: Nandyavarta scheme as interpreted by Ram Raz*  
*Source: Raz, 1834*



*Figure 2-65: Nandyavarta scheme as interpreted by S C Mukherji*  
*Source: Acharya, 1933*





NANDYĀVARTA SCHEME

- |  |                             |
|--|-----------------------------|
| 1 Unspecified                                      | 3k Palanquin bearers        |
| 2 Brahmins (entire round)                          | 3m Guest houses             |
| 3a Palace (several alternatives)<br>and Kshatriyas | 4a Oilmen and Potters       |
| 3b Ministers and nobles                            | 4b Fishmongers and Butchers |
| 3c Priests   | 4c Hunters                  |
| 3d Police  | 4d Washermen                |
| 3e Musicians and Courtesans                        | 4e Dancers                  |
| 3f Architects                                      | 4f Tailors                  |
| 3g Cosmeticians                                    | 5a Blacksmiths              |
| 3h Armour-makers                                   | 5b Basket makers            |
| 3i Physicians                                      | 5c Weapon-makers            |
| 3j Watchmen  | 5d Leather workers          |

Figure 2-66: Nandyavarta scheme for a village, as interpreted by J. S. Smith  
Source: Smith, J.S., 1976

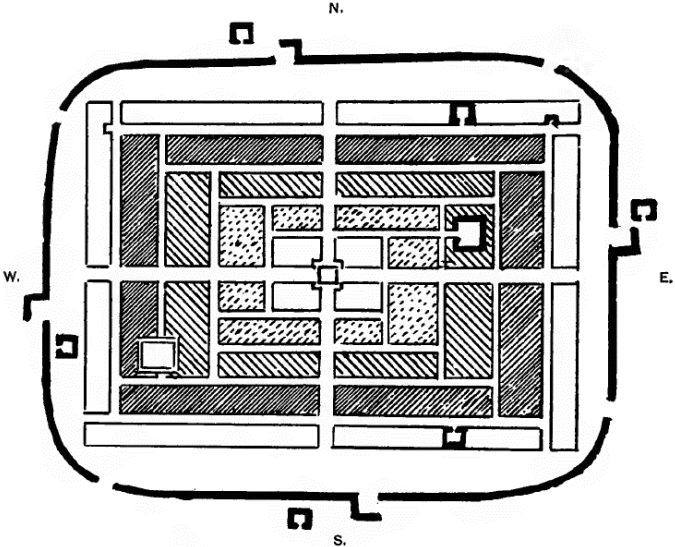


Figure 2-67: Nandyavarta scheme for a village, as interpreted by E. B. Havell  
Source: Havell, 1915

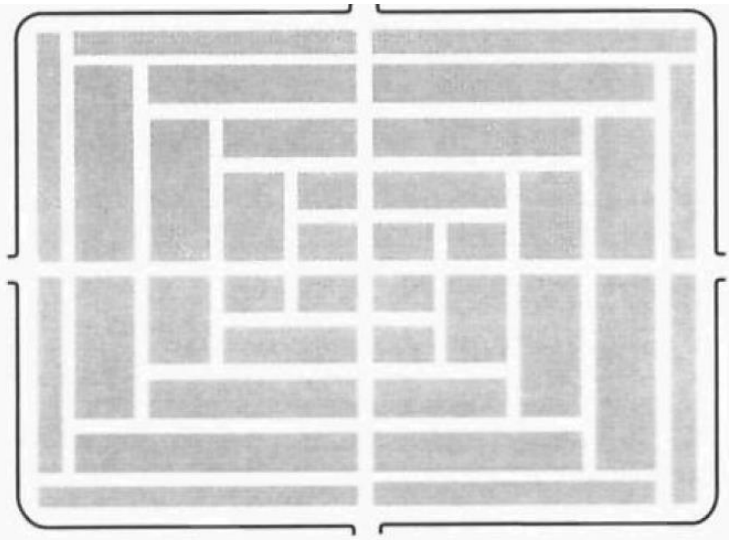


Figure 2-68: Nandyavarta scheme for a village, as interpreted by Sinha  
Source: Sinha, 1998

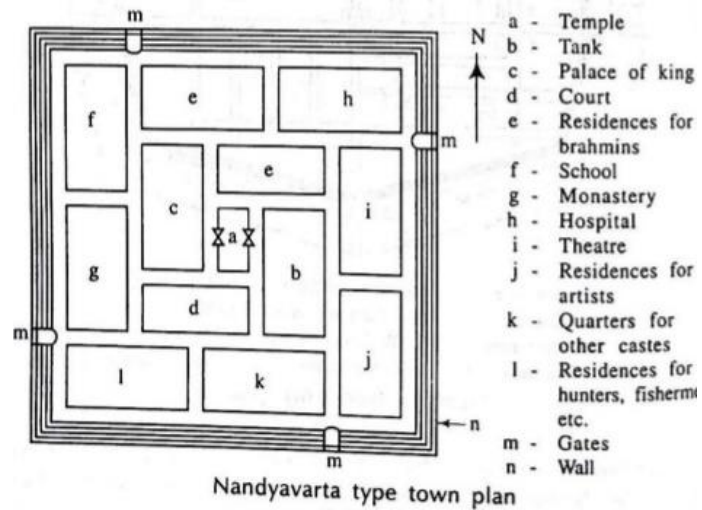


Figure 2-69: Nandyavarta scheme for a village, as interpreted by Parmar  
Source: Parmar, 2018

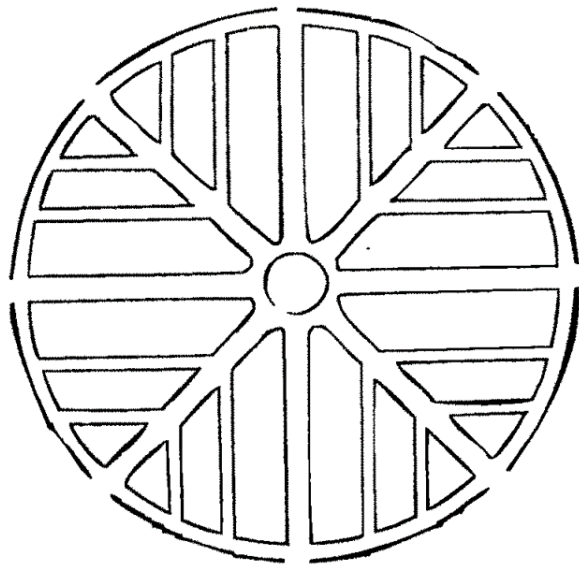


Figure 2-70: Nandyavarta scheme for a village, as interpreted by Vyas  
Source: Vyas, 2001

#### 2.3.7.8.4. Padmaka scheme

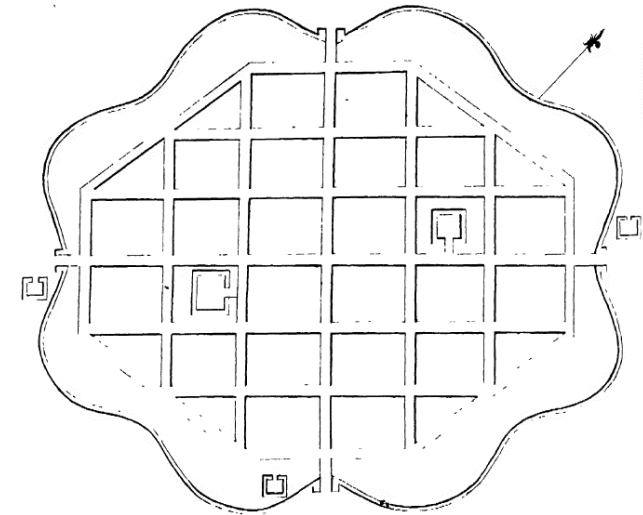


Figure 2-71: Padmaka scheme for a village, as interpreted by Ram Raz  
Source: Raz, 1834

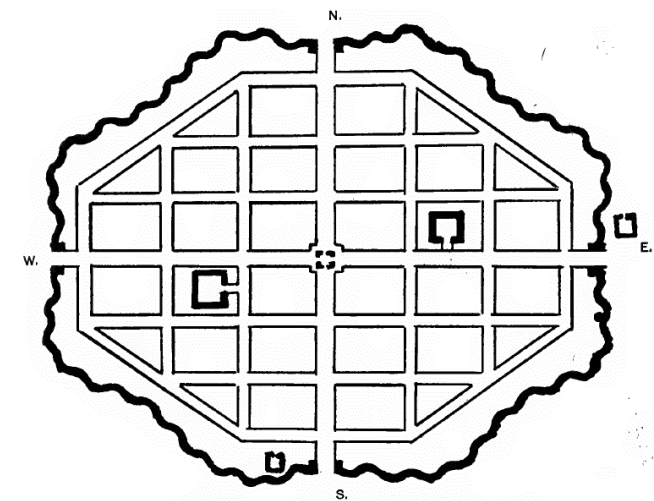


Figure 2-72: Padmaka scheme for a village, as interpreted by E. B. Havell  
Source: Havell, 1915



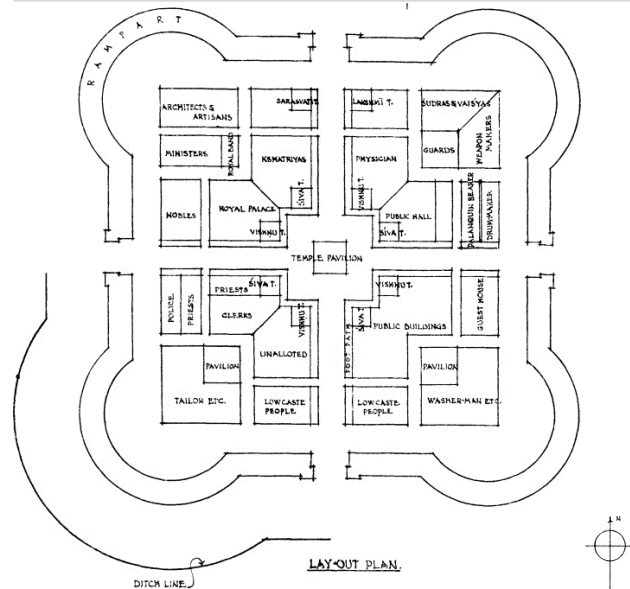


Figure 2-73: Padmaka scheme for a village, as interpreted by S C Mukherji  
Source: Acharya, 1933

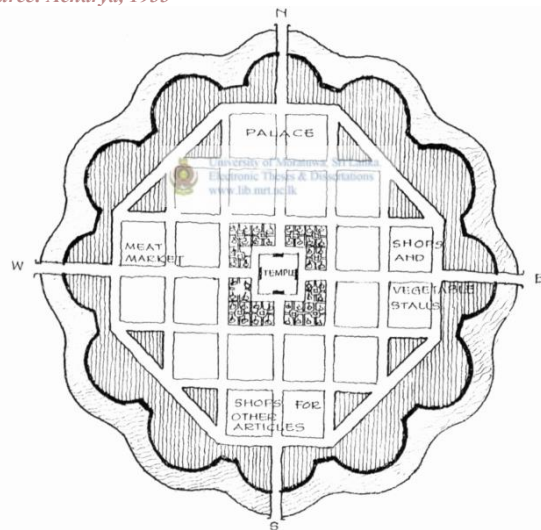


Figure 2-74: Padmaka scheme for a village, as interpreted by Fonseca  
Source: Fonseca, 1997

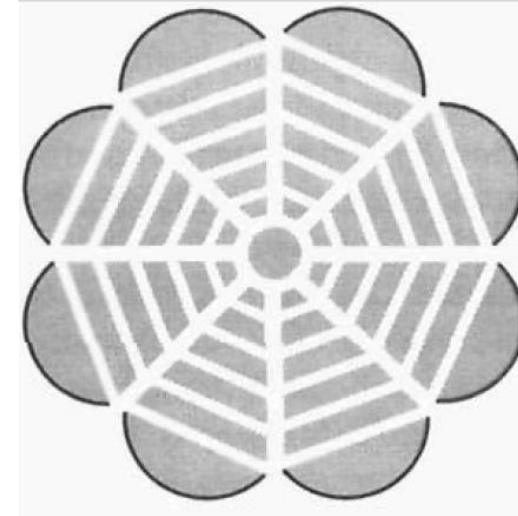


Figure 2-75: Padmaka scheme for a village, as interpreted by Sinha  
Source: Sinha, 1998

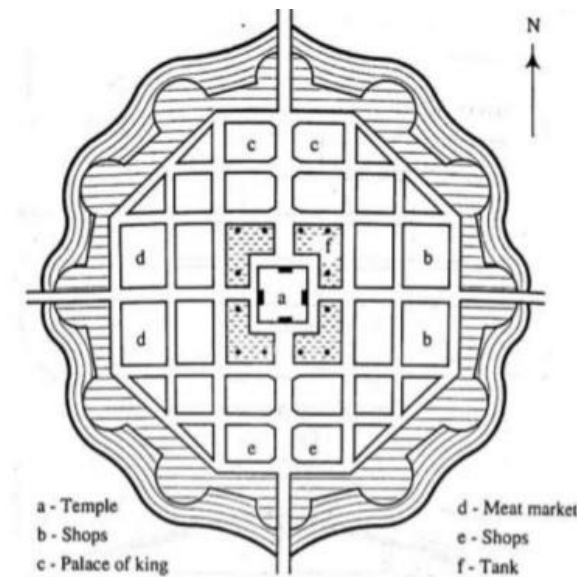


Figure 2-76: Padmaka scheme for a village, as interpreted by Parmar  
Source: Parmar, 2018

## 2.3.7.8.5. Svastika scheme

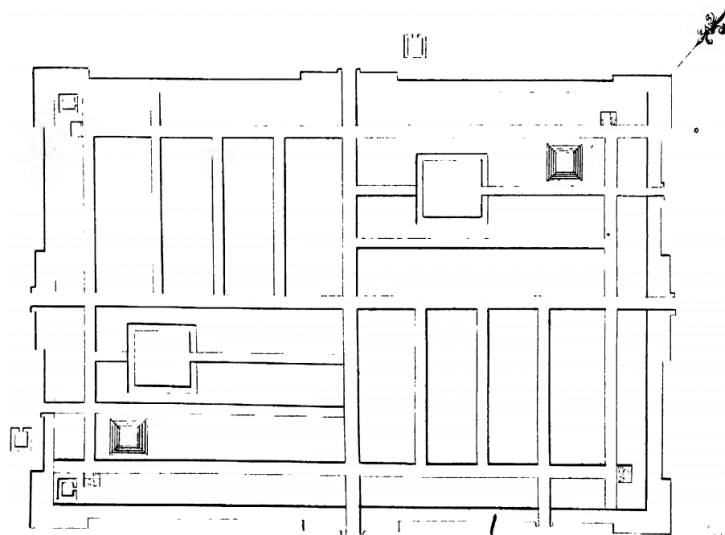


Figure 2-77: Svastika scheme for a village, as interpreted by Ram Raz  
Source: Raz, 1834

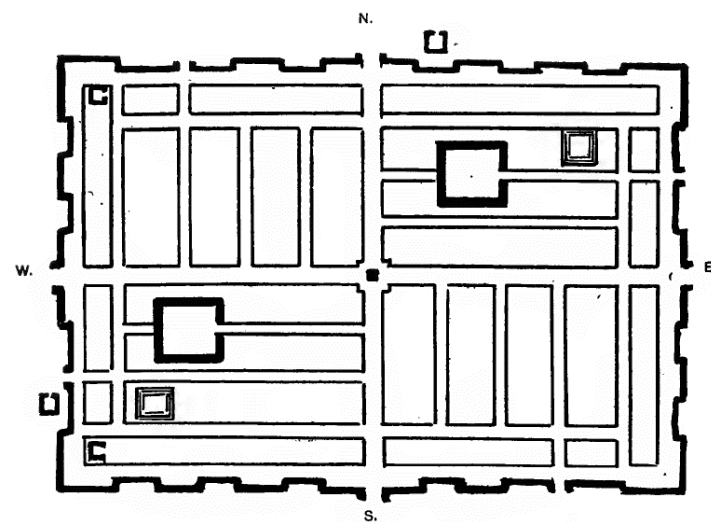


Figure 2-78: Svastika scheme for a village, as interpreted by Havell  
Source: Havell, 1915

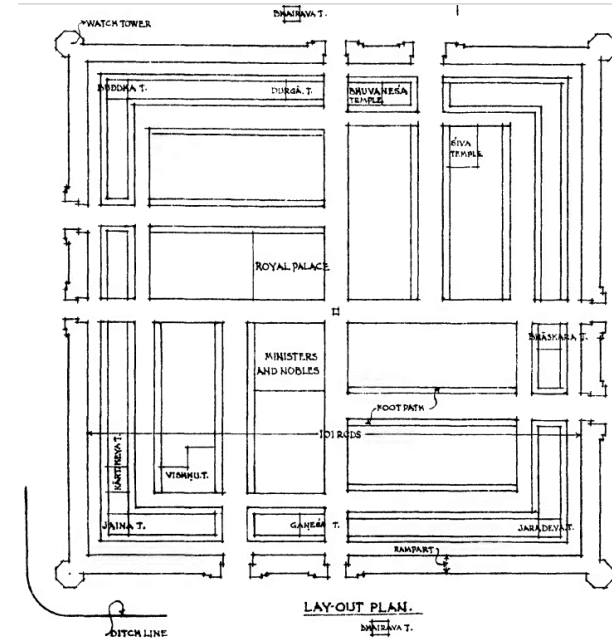


Figure 2-79: Svastika scheme for a village, as interpreted by S C Mukherji  
Source: Acharya, 1933

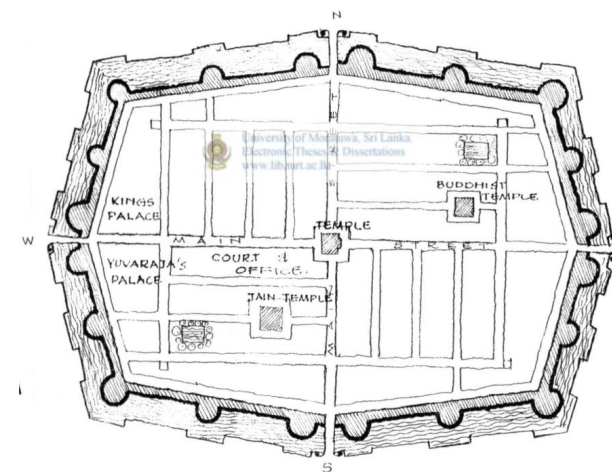


Figure 2-80: Svastika scheme for a village, as interpreted by Fonseka  
Source: Fonseka, 1997

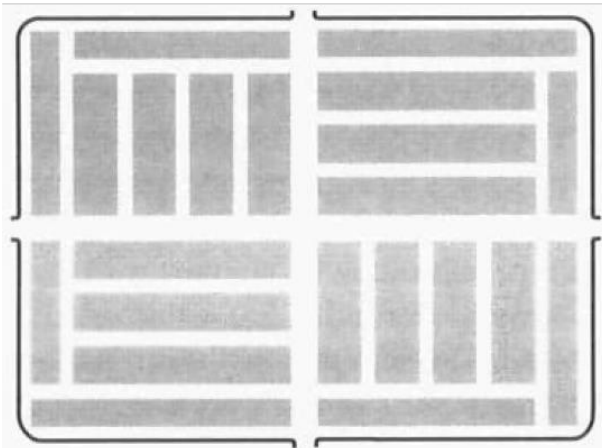


Figure 2-81: Svastika scheme for a village, as interpreted by Sinha  
Source: Sinha, 1998

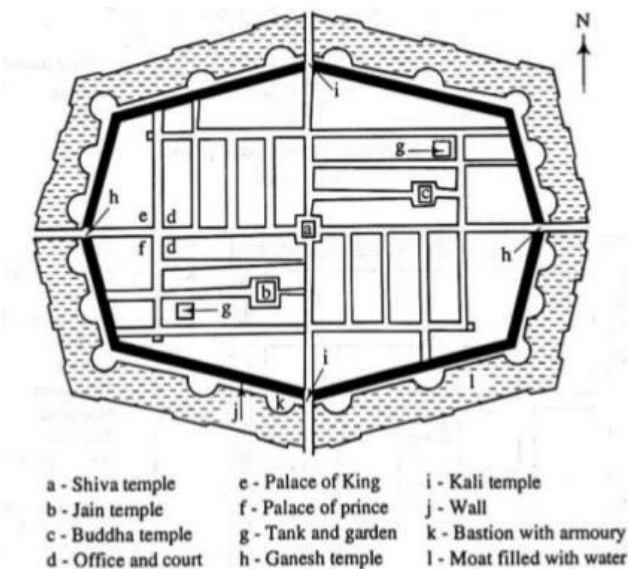


Figure 2-82: Svastika scheme for a village, as interpreted by Parmar  
Source: Parmar, 2018

2.3.7.8.6. Prastara scheme

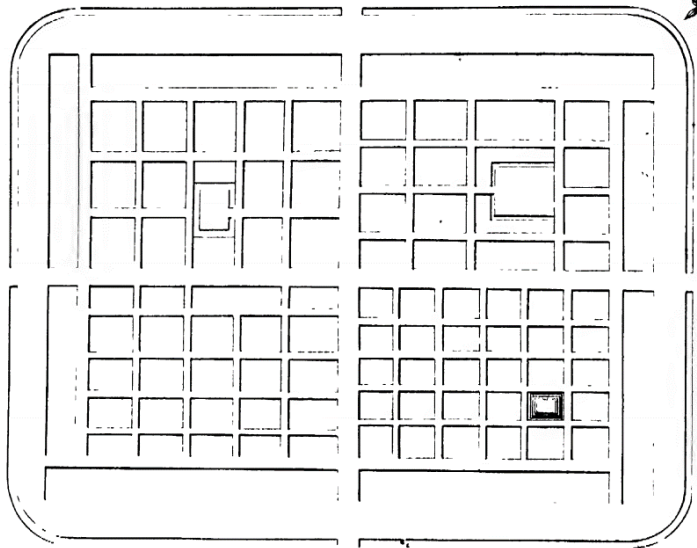


Figure 2-83: Prastara scheme for a village, as interpreted by Ram Raz  
Source: Raz, 1834

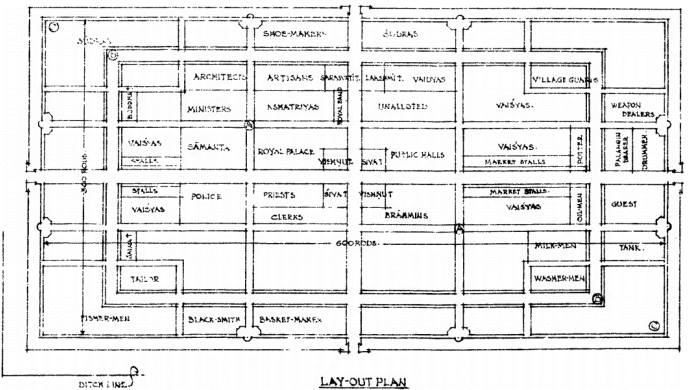


Figure 2-84: Prastara scheme for a village, as interpreted by S C Mukherji  
Source: Acharya, 1933



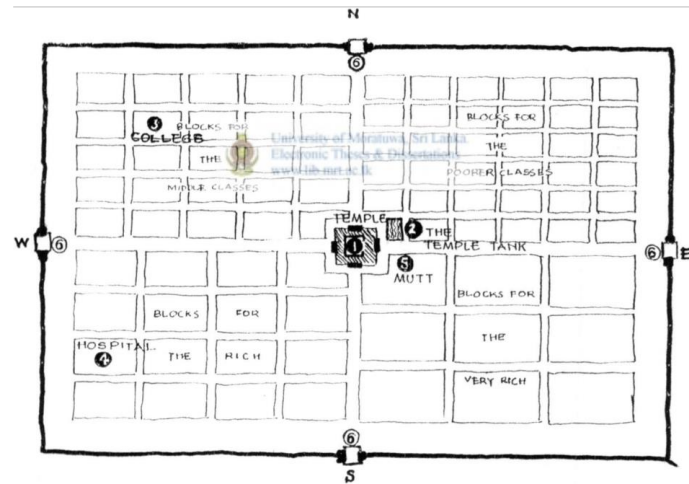


Figure 2-85: Prastara scheme for a village, as interpreted by Fonseca  
Source: Fonseca, 1997

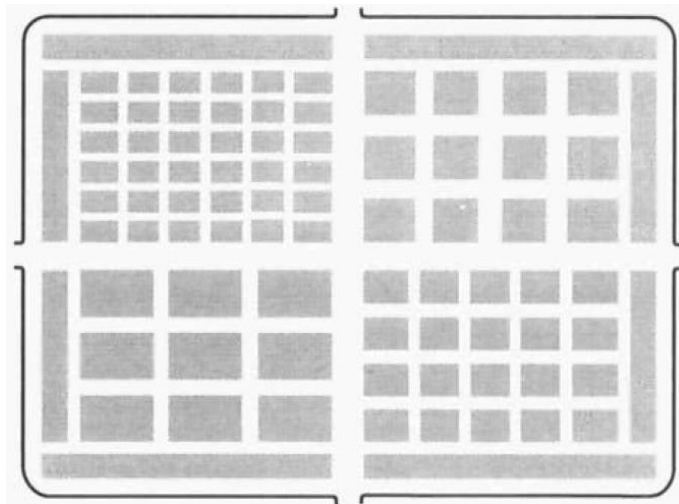


Figure 2-86: Prastara scheme for a village, as interpreted by Sinha  
Source: Sinha, 1998

### 2.3.7.8.7. Karmuka scheme

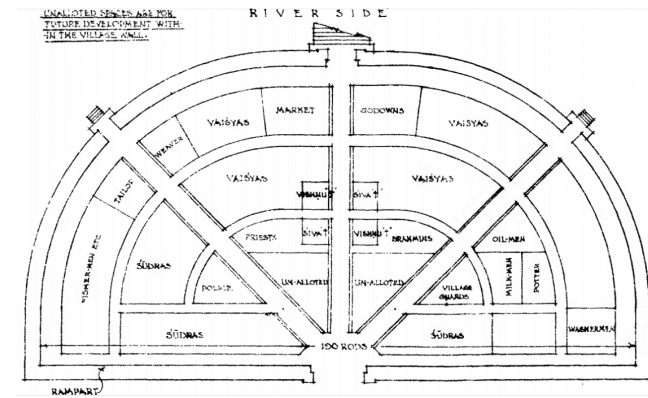


Figure 2-87: Karmuka scheme for a village, as interpreted by S C Mukherji  
Source: Acharya, 1933

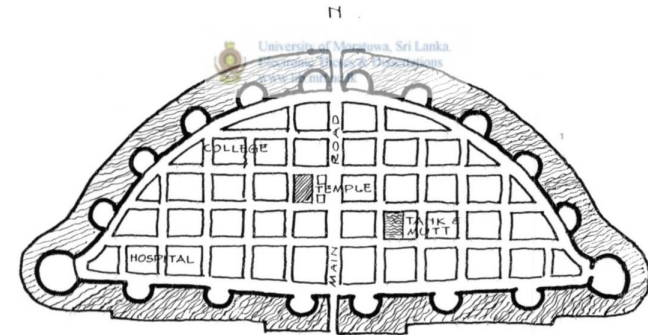


Figure 2-88: Karmuka scheme for a village, as interpreted by Fonseca  
Source: Fonseca, 1997

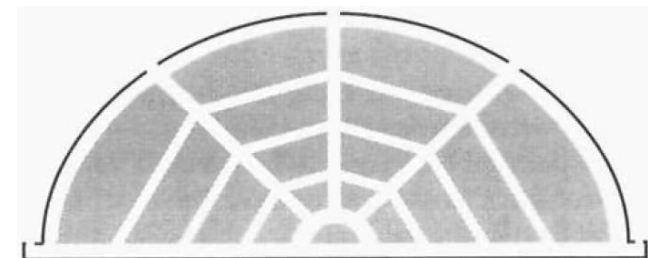


Figure 2-89: Karmuka scheme for a village, as interpreted by Sinha  
Source: Sinha, 1998

### 2.3.7.8.8. Chaturmukha scheme

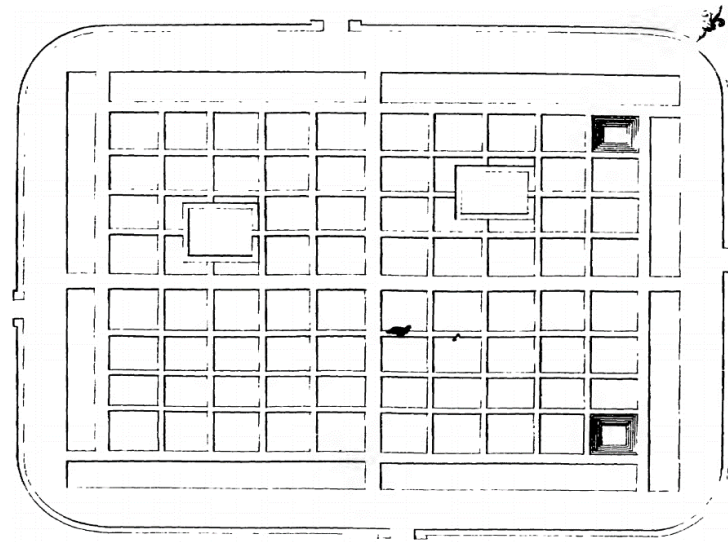


Figure 2-90: Chaturmukha scheme for a village, as interpreted by Ram Raz  
Source: Raz, 1834

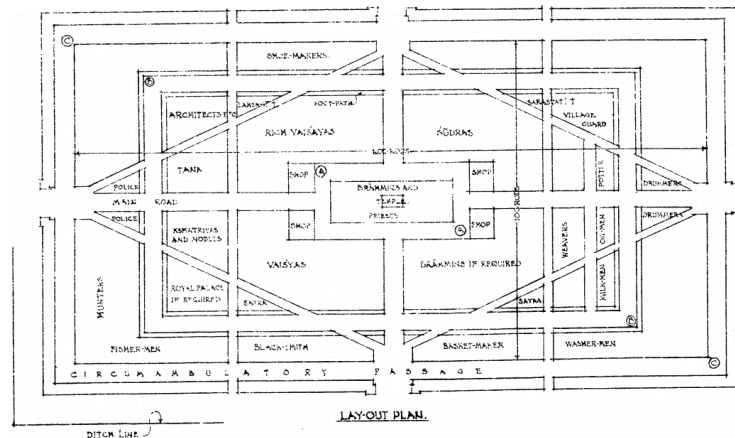


Figure 2-91: Chaturmukha scheme for a village, as interpreted by S C Mukherji  
Source: Acharya, 1933

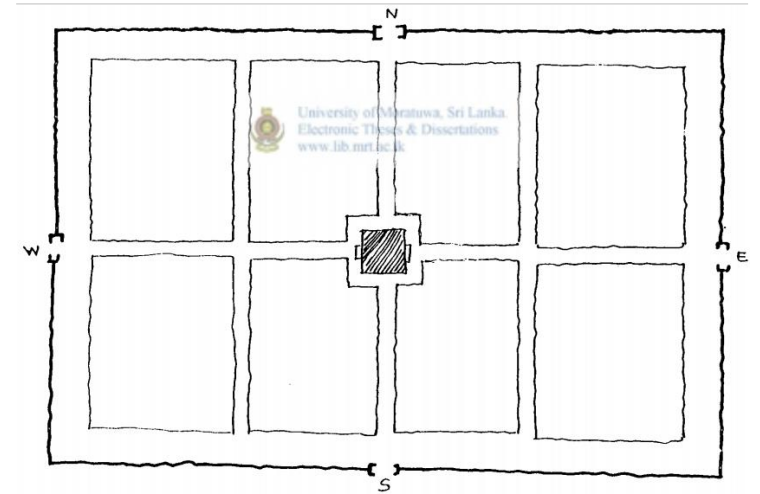


Figure 2-92: Chaturmukha scheme for a village, as interpreted by Fonseka  
Source: Fonseka, 1997

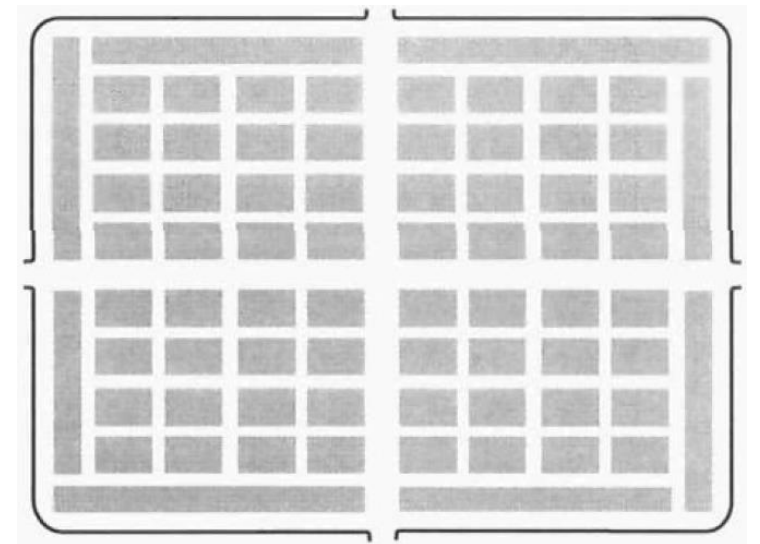


Figure 2-93: Chaturmukha scheme for a village, as interpreted by Sinha  
Source: Sinha, 1998



### 2.3.7.9. Epistemology for rural planning

The impressive body of conceptually similar prototypical ‘schemes’ or ‘templates’ for rural planning which is observed in the *Mānasāra* and the *Mayamata* (both incidentally being localised to post-1000 CE South India) is a phenomenon found prominently in South Indian *Vāstuśāstra* texts (including the *Viśvakarmā Vāstuśāstra*, the *Kāmikāgama* etc.); not reflected to the same intensity and depth in the later *Vāstuśāstra* texts of the Northern regions. The diagrams themselves are absent in the original manuscripts and only the descriptions in verse are provided; thus requiring the interpretation of contemporary scholars, draftsmen etc. to derive the resultant settlement scheme from the text, i.e. the illustration from the description (Desai, 2012). These illustrations have prompted the identification of many orthogonally planned settlements in Indian antiquity with having followed the norms of *Vāstuśāstra* – an often anachronistic endeavour, since the examples taken for such settlements (such as Taxila, Bhita, Sisupalgarh etc.) belong to the proto-Historic periods of their particular regions with even available historical evidences not being adequate to establish the compliance of these settlements with the textual norms; this position is best summarised by Bafna’s opinion on orthogonality and antiquity of Indian settlements (Bafna, 2000, p. 26):

*“As a consequence of this notion, any existing historical structure of Hindu patronage that bears signs of an orthogonal grid, or even exhibits a square profile, is interpreted as having been designed upon the Vāstupuruṣamaṇḍala. But scholars who try to probe further, to determine how and to what extent such structures could have been generated using the mandala, invariably run into difficulties.”*

The essential framework of a settlement scheme prescribed in these *Vāstuśāstra* texts follows the following sequence:

1. Application of a base mandala to the site as appropriate to the nature of settlement (usually odd-numbered and 81x81 being the most preferred)
2. Division of the site into the appropriate *padas* as per the mandala chosen
3. Selection of the appropriate street layout – itself dependent on the type of scheme selected for the settlement; by which the cardinal streets, the plot divisions and sub-streets are oriented and placed
4. Division of the settlement quarters into 4 concentric rings of the Brahmya, Daiva, Manushya, and Paisacha *padas*
5. Allocation of various castes and occupations to certain specific portions of the settlement based on the *padas* of the mandala chosen or the directional quarters

6. Allocation and erection of temples, tanks, walls, gates and other key components of the built environment as per the *padas* of the mandala of the directional quarters

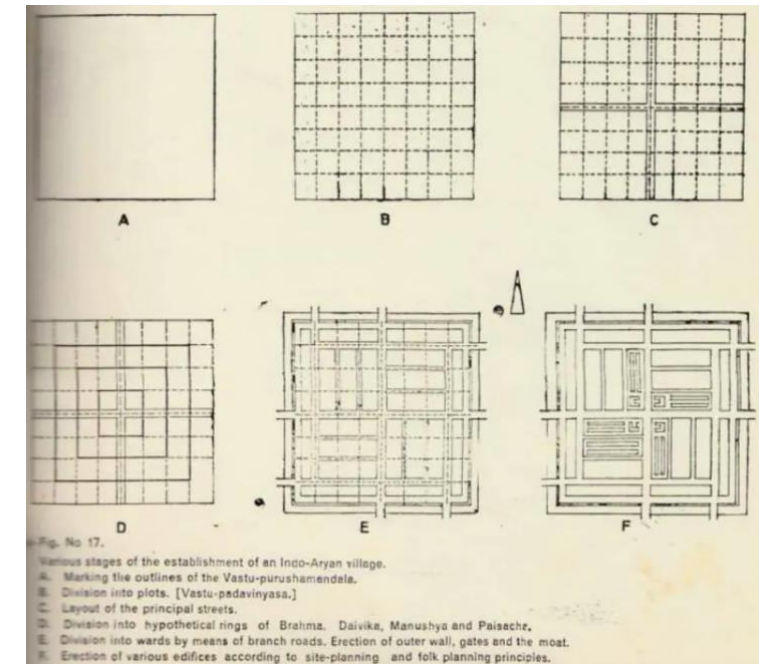


Figure 2-94: Stages of establishment of an Indo-Aryan village  
Source: After Sheikh, 2017

Therefore, it is not easy to ascribe the ‘planned’ nature of a historic Indian settlement based on its orthogonality alone, since that deprives the schemes prescribed in these texts of their socio-spatial regulatory nature. This is observed in the calls for more rigorous assessments when deciding the level of compliance of nominated settlements for their compliance to *Vāstuśāstra* norms; as Bafna observes (Bafna, 2000, p. 45):

*“... signs of orthogonality in buildings need not imply a grid, and evidence of a grid being employed need not imply a mandala; any evidence that aims to establish conclusively the use of a mandala as a design tool must, therefore, be much more direct.”*

The South Indian *Vāstuśāstra* texts seek to provide this distinction through caste-based socio-spatial norms (prescribed w.r.t. the *vāstupadavinnyāsa*) and iconography-based settlement forms (discussed next) apart from quantitative street layouts. This is a

development observed in South Indian Vāstu literature prominently, as compared to the Northern texts such as the Agni Purāṇa, the Matsya Purāṇa etc. (Dutt B. B., 1925). Many of the diagrams by the various authors compiled previously, which do not clearly describe the socio-spatial caste-based allocations are actually depriving the schemes of their meaningful distinctions; thus, reducing the diagrams to mere exercises of fitting orthogonal planning units into an internally indistinguishable framework of streets, temples and tanks. The enduring popularity of this socio-spatial typology is noticed in its continuation from the times of the pre-300 CE Arthaśāstra to the post-1000 CE Vāstuśāstra texts; and can be ascribed to the continuing application of prevalent contemporaneous social norms to contemporaneous spatial norms. This trend continues in the South Indian literary Vāstu tradition with many texts adapting the same settlement typology; with (potentially) geographically, chronologically and literally closer compositions such as the Mānasāra, the Mayamata, and the Kāmikāgama showing greater overlaps of settlement scheme types.

*Table 2-8: Comparison of names of types of settlement schemes in South Indian Vāstuśāstra texts*

Mayamata	Manasara	Vishvakarma Vastushastra	Kamikagama
Dandaka	Dandaka	Mandaka (D-?)	Dandaka
	Sarvatobhadra		Sarvatobhadra
Nandyavarta	Nandyavarta		Nandyavarta
Padma	Padmaka		Padmaka
Svastika	Svastika		Svastika
Prastara	Prastara	Prastara	Prastara
Paraka		Paraka	Paraga
	Chaturmukha	Caturmukha	Chaturmukha
	Karmuka		Karmuka
Sripratishtita			Sripratishtita
Prakiranaka			Prakirnaka
Dissimilar types of settlement schemes by name			
		Nitya-mangala	Samvatkara
		Purva mukha	Kumbhaka
		Bahulika	Srivatsa
		Viswakarmaka	Vaidika
		Visvesa	
		Kailasa	

### 2.3.7.9.1. Possible role of iconography in Vāstuśāstra planning ontology

The correlation of the nomenclature of the schemes for settlements with distinctly iconographic elements (sometimes from different religious cultures) such as the set of Theravada Buddhist Aṣṭamaṅgala icons, the set of Digambara Jaina Aṣṭamaṅgala icons, the Pāñcarātra Vaiṣṇava mandala configurations etc. could demonstrate a potential adaptation of the elements of religious iconography from influential contemporaneous sects and religions (i.e., in Early Medieval South India) into ontological concepts of settlement planning of Medieval era Vāstuśāstra literature. This position could explain the idiosyncratic application of the religious iconography of the svastika (Indian mystic cross), the nandyavarta (Indian religious symbol), the sankha (conch, an Indian religious implement), the camara (flywhisk, an Indian religious implement) etc. into the settlement schemes of the Svastika, the Nandyavarta, the Prastara, the Prakirnaka respectively. The eclectic manner of this proposed borrowing can also explain the lack of correlation between the uniquely shaped sources of names for these schemes and the uniformly orthogonal plans for the actual neighbourhoods prescribed for each scheme in the texts. The schemes when thus separated from their potentially iconographic origins are unique only for their application of the Vāstupuruṣamaṇḍala as a justifying mechanism for the socio-spatial regulation of castes and occupations, which was already introduced in the Arthaśāstra centuries ago.

### 2.3.7.10. Aṣṭamaṅgala in the Mānasāra

Karunaratne illustrates the prescriptions for the adorning of the crown in the Mānasāra (Chapter 49 - The crowns (mauli) and coronation (abhiṣeka)) as a Hindu version of the Buddhist Aṣṭamaṅgala (Karunaratne, 1997), consisting of the following icons (Acharya P. K., 1933, p. 492):

1. Śrīvatsa
2. Pūrṇakumbha
3. Cāmara
4. Dīpa
5. Chatra
6. Mirror
7. Śaṅkha
8. Svastika



Figure 2-95: Adorning of the crown with the eight auspicious symbols (Aṣṭamaṅgala) as per the Mānasāra  
Source: Karunaratne, 1997

The similarity of this iconographic set to the Theravada Buddhist tradition (historically established to be close to Tamil Nadu – based in Ceylon) and the Digambara Jaina tradition (historically established to have been popular throughout Tamil Nadu in the Early Medieval periods) could yield further correlations, as explored ahead.

### 2.3.8. Sangam Literature - Neṭunalvāṭai

Early historic society in “Tamilakam”, i.e. the ethno-geographic area identified with the was organised on the basis of kinship ties reflected in the distinctive pattern of economic activities in five different eco-zones collectively called the *aintinai*, a dominant theme in the Sangam texts. The tinai concept points to an understanding of human adaptation to environment, while the literature itself contains many references to urbanism and architecture (Zvelebil, 1973). A key reference is found in the Sangam poem called Neṭunalvāṭai by Nakkirar I from the Pattuppāṭṭu anthology, which is conventionally dated to between 100 CE – 300 CE (Zvelebil, 1973, pp. 41-42); and contains the following stanzas titled (in English) ‘The Construction Of The King’s Palace’ which can be rendered in English thus (Herbert, 2012):

*At mid-day when the bright,  
ray-spreading sun climbed on toward  
the west side and was high in the vast  
sky, learned men, who had read books  
on construction, noted the cardinal  
directions, decided where to construct,  
planted two sticks on the ground at  
noon time when they did not see the  
sun’s shadow fall on land, tied threads  
with precision, prayed to the gods, and  
built the palace with many rooms,  
suitable for the well renowned king.*

This mention of the ‘books on architecture’ is asserted by Toranagallu as being a reference to the books of Vāstuśāstra, which is taken to confirm the late date of the compilation of the Sangam canon (around 800 CE - 1200 CE), which is taken to coincide with the peak period of temple-building, palace-building and compilation of Vāstu literature in South India (and Tamil Nadu in particular) (Toranagallu, 2021). The poem also describes specifically the storeys and rooms of the palace, the wall and gates of the citadel, the columns in the queen’s chambers, the mouldings of the furniture in the palace etc.; all of which are accorded similar importance in the Southern Indian Vāstu tradition (Toranagallu, 2021); especially in the texts inspired by the Southern Indian Śaiva Mantramārga Pratiṣṭhānta literature.

Some important points to note here were that the texts were compiled about 1000 years after the date of compilation ascribed to them traditionally; thus, the assertions may not be valid until supported by other forms of evidences. This indirect mention of Vāstu literature and of the architects educated in this domain is referenced here with respect to the building of palaces, and in some other cases for temples, but not for cities. The same poem when describing the installation of the city gates, refers to the practitioner as a

carpenter; and the literature does not mention familiar terms such as *vāstu*, *sthapati*, *mandala* etc.

### 2.3.9. Tiruvīlaiyāṭar Purāṇam

Another indicator of the rising importance of *Vāstu* literature among the literati of Medieval Tamil Nadu is the mention made of the “hoary texts” referred to for the planning of the fort walls, moat etc. of the fort of Madurai in the 16<sup>th</sup> century devotional epic based in Madurai by Parañcōti Munivar called the *Tiruvīlaiyāṭar Purāṇam* (Ayyar, 1913, p. 29ff). This collection of sixty-four 16th-century Shaivite devotional epic stories (all of which are especially connected to Madurai and its chief Śaivite deities) is itself a recension of an earlier Old *Tiruvīlaiyāṭar Purāṇam*; of which Parañcōti Munivar’s 16<sup>th</sup> century text contains many detailed descriptions of the planning of the old city and the new city of Madurai, both of which were planned according to the “books of Maya”, which possibly refers to the *Vāstu* literature of South India (Ayyar, 1913, p. 39ff).

The text describes in detail the process of clearing the land, building of walls and gates, building of the temple, choosing sites for the various castes and classes and the building of the palace in consecutive and clear verses. These portions could indicate a familiarity of the composers with the town planning method of the *Vāstu* literature of South India, during a period contemporaneous with active architectural and infrastructural investments by royalty, nobility, citizens etc. of Tamil Nadu in the establishment of new settlements and the development of older settlements (Heitzman, *Temple Urbanism in Medieval South India*, 1987b).

The text also describes how the city of Madurai was not laid out perfectly straight (despite the rules of *Vāstuśāstra* prescribing orthogonality); and had many irregular city walls and crooked streets which earned it the name “*Tirumudangal*” – meaning ‘the great twisted one’; and that the city’s perimeter was like a serpent swallowing its own tail (reminiscent of the Greek concept of *ouroboros*), which gave it the name *Ālavāy* (Ayyar, 1913). Thus, even recent research on the possibilities of Madurai being built according to the prescriptions of the ‘books of Maya’ have not returned assertable results – especially when investigated through compliance with the rules of orthogonality and cardinality, as expressed in the late *Vāstuśāstra* texts (Smith J. S., 1976).

## 2.4. Historical and Archaeological Literature on Early Urbanism

Authors have attempted the description of Early Historic Indian cities solely on the basis of literature; such as Ayyar, Dutt and Ray (Ayyar, 1913) (Dutt B. B., 1925) (Ray A. , 1964). Some authors have attempted to describe urbanism in that period via archaeological evidence alone (Smith M. L., 2016) (Sawant & Shete, *A Review of Early Historic Urbanization in India*, 2016). Some others have attempted to trace history by collecting, comparing and then analysing both the sources simultaneously (Erdosy G. , 1985) (Sachdev & Tillotson, 2002) (Ghosh A. , 1973) (Sharma Y. D., 1964) (Singh U. , 2008).

### 2.4.1. Overviews

The study of history for this research began with a review of scholarly overviews on Indian history such as the review of India from the ancient periods until the early 12<sup>th</sup> century (early medieval period) by Singh (Singh U. , 2008); the review of Indian history from its proto-historic periods to 1300 AD by Thapar (Thapar, 2015); reviews of Indian history based on early state formation and South Indian regional cultures (Kulke & Rothermund, 2002); and reviews of Indian history focused on early state formation in South India (Stein, 2010).

These studies were supplemented by some research conducted by scholars on early Indian economic history (Sharma & Jha, 1974), historiographic studies on early history of India (Kosambi D. D., 1954) (Kosambi D. D., 1963), indigenisation of Indian anthropology (Sinha V. , 2005), the construction of community identities over time (Thapar, 1989) etc.

### 2.4.2. First Wave of Urbanisation (Pre-1000 BCE – Proto-Historic era)

#### 2.4.2.1. Indus Valley Cultures

The study of this period began with a review of the scholarly overviews of this period as provided in the following collections – all of which are primarily concerned with the urban cultures found in the valleys of the Indus and its associated rivers in the Northwestern Indian subcontinent (Chattopadhyaya (ed.) B. , Block 2 - *The earliest cities in the subcontinent*, 2016); (Meister M. W., 2010); (Wheeler, 1966). These studies reveal the highly advanced nature of these settlements with planned layouts, engineered materials and well-designed built features in the public domain.

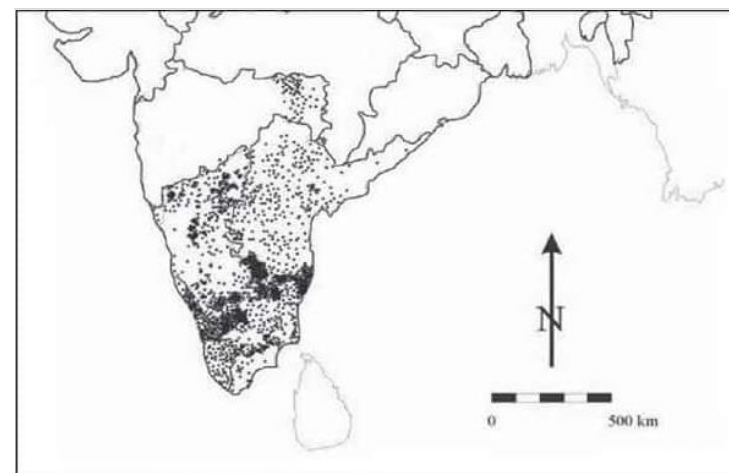
The literature available also discusses the metrology of these urban cultures (Kenoyer, 2010), the nature of town planning practiced by these cultures (Bisht, 1984) (Danino, 2005) (Danino, 2008); the metrological similarities between these settlements and the settlements of later periods in the Indian sub-continent (Pant & Funo, 2005).

The wave of settlement and rural development that occurred after the dispersal of these cultures from their urban centres (Parikh & Petrie, 2019) has also been discussed in some literature. The theories and evidences on the nature of the association between the Indus cultures and the culture of the Rig Veda (Sonawani, 2015) (Bisht, 1999); their connections in architecture (Meister M. W., 2010) etc. has also been under research.

The key issue with inclusion of these cultures into the scope of this study is that the script used by these cultures are as yet deciphered, rendering their specimens of writing invalid as history currently (Shinde, Deshpande, Osada, & Uno, 2006). Thus, no ideas or concepts about the intended or envisioned purposes of their cities can be validated by internal historical evidence, until the script's decipherment or discovery of other material evidences.

#### 2.4.2.2. Post-2000 BCE Cultures

The earliest known post-Harappan cultures in India are the Megalithic peoples of India who are dated as having been active from about 2000 BCE onwards based on the estimated ages of their dolmens/menhirs and their excavated mortal remains (Ubhaykar, 2016). The possibly older pre-historic Megalithic settlements of South India (in modern-day Karnataka) have also been explored through contemporary archaeological methods without conclusive results on the nature of these settlements (Morrison, 2005).



*Figure 2-96: Distribution of Megalithic sites in peninsular India*

*Source: ASI via Rajat Ubhaykar, 2016*

#### 2.4.3. Second Wave of Urbanisation (Post-1000 BCE - Early Historic era)

The period of Early Historic urbanization was dependent on the rise of various inter-related phenomena such as complex politics and social structures; the gradual development of states, cities, city-states and ruling classes; technological advancements such as various craft industries and extensive use of metals (iron, copper etc.); architectural advancement such as fortifications, use of baked bricks, ring wells etc.; development of writing (Brahmi script); early coinage and long-distance trade; new and comparatively unbiased religious movements (Sawant & Shete, 2016). The development of urbanisation in different parts of India is covered in an extensive overview by IGNOU which also introduces the standard historic literary sources for this age, such as the Greek historian Megasthenes, the Pali Buddhist texts, the Arthaśāstra etc. as well as the standard historiography for the period alongwith discussions on some key cities such as Taxila, Pataliputra etc. (IGNOU, 2016). Some of the standard historical-archaeological reviews of the cities on the Gangetic-plains (which form the Second Wave of Urbanisation in Early Historic India after the Indus Valley cultures) were reviewed (Barba, 2004) (Allchin F. R., 1990) (Allchin F. R., 1995) (Prasad, 1973) (Erdosy G., 1985) (Sawant & Shete, 2016). The points of intersection between urbanism and religion (Takahashi, 2000) (Shaw, 2007), urbanism and the metallurgical developments (Neogi, 1918) (Kosambi D., 1965), urbanism and foreign influences



urbanism and social stratification, especially the validity of early historic Indian feudalism (Jha, 1991) (Sharma R. S., 1958); were some of the other streams explored.

Secular literature which discussed the settlements from this time period include dramas and poetry; but are less credible given their primary premise of being fiction-writing (Chattopadhyaya (ed.) B., Block 2 - The earliest cities in the subcontinent, 2016). The analysis of early historic material evidences through literary frame-works such as those found in the Vāstuśāstra and the Arthaśāstra (Ghosh A., 1973) (Dallaporta & Marcato, 2010) (Schlingloff, 2012) are rare since the materials obtained do not consistently display the correspondences required to merit analyses based on such literature (Sachdev & Tillotson, 2002); especially since the literature has not been historicized appropriately yet to allow their use as historical documents (Otter, 2016) (Pollock, 1985).

#### 2.4.3.1. Overview

The standing opinion is that about 70-80% of the population lived in villages during early Buddhist times – roughly the 6<sup>th</sup> – 4<sup>th</sup> centuries BC (Ghosh A., 1973) (Ray A., 1964). Yet we observe that Patanjali, in his 2<sup>nd</sup> century BC text Mahabhashya, says that one should not be too fastidious about the distinction between a town and a village (Patanjali) (Ray A., 1964). There is research published that argues that towns in ancient India were “... *nothing more than amplified villages, only somewhat richer, more elaborate and sumptuous*”, (Ray A., 1964), yet this position does not find much support today. Ghosh states that the Early Historic period was often synchronized with the earliest historical cities and the advent of Northern Black Polished Ware (Ghosh A., 1973). The two most important points of difference for Sharma, between early historic cities/towns and villages are (Ghosh A., 1973):

- 1) the town/city was distinctly a political and commercial centre
- 2) the population was predominantly non-agricultural in towns/cities

Sharma contended that Early Historic cities and towns could be identified based on the prevalence of burnt-brick structures – “*In India, till recently the existence of kiln-burnt brick houses distinguished the town from the village, and this could serve as a yardstick even in classifying older habitations.*” (Sharma Y. D., 1964). Ghosh’s contention is also similar to this stand, that the characteristics of these Early Historic cities were (Ghosh A., 1973):

1. the use of burnt-brick structures
2. minting of coins
3. the erection of fortifications around cities

#### 2.4.3.2. Key Cities of the period

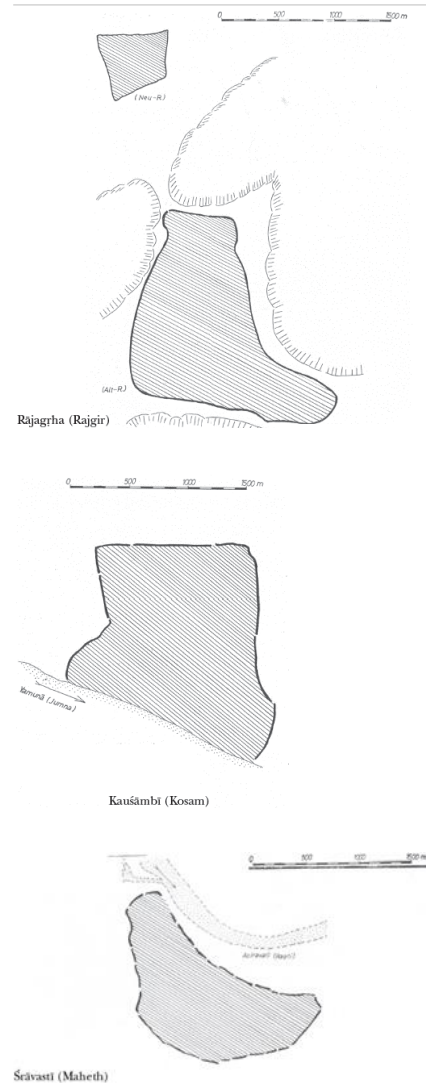
The use of large-scale baked bricks for civil construction, particularly for domestic houses is understood to have begun in India from the third century BCE at Rajghat and Kausambi and from around the second century BCE at Sonkh, Indor Khera and Bhita; especially for components such as wells, drains, tanks, soak pits etc. (Barba, 2004). The installation of such infrastructure in the public domain is taken to be indicative of a public authority or a collective agency that could implement such construction, especially for the settlements at Rajghat, Kausambi, Hastinapur, and Mathura; were some houses, streets and lanes streets and lanes were of burnt bricks and had terracotta drains for stormwater discharge (Barba, 2004).

Schlingloff in a review of Indian Early Historic cities considers that the prescriptions of the Arthaśāstra for city fortifications and city gates are significantly similar to the excavated portions of many cities (which predated the text – such as, Sisupalgarh, Kaushambi, Rajgir etc.) to propose that the text was descriptive in origin and was based on historical sources (Schlingloff, 2012, p. 72). The portions of the text which describe the components and constructions of the city gate were useful to Schlingloff in the reconstruction of the excavated gates of the fortified settlement of Sisupalgarh and Śrāvastī (Schlingloff, 2012, p. 9).

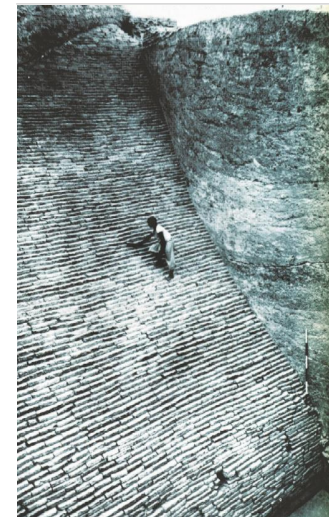
**Table 2-9: Schlingloff’s review of the layout of selected Indian Early Historic cities**  
**Source: Schlingloff, 2012**

Sanskrit name	Modern name	Surface in km <sup>2</sup>	Circumference in km	Approximate form	Number of gates	Location
Pāṭaliputra	Patna	25.50	33.8	parallelogram	64	confluence [Son]-Ganges
Kauśāmbī	Kosam	2.29	6.1	trapezoid	6	left bank of Jumna
Śrughna	Sugh	1.97	6.4	triangle	?	right bank of [Jumna]
(old-)Rājagṛha	Rajgir	1.87	6.2	trapezoid	?	valley floor
Vidīśā	Besnagar	1.72	5.4	rectangular	?	confluence Bes-Betva
Ahichhatra	Ramnagar	1.52	5.4	triangle	?	
Śrāvastī	Maheth	1.45	5.4	triangle	?	right bank of [Rapti]
Puṇḍravardhana	Mahasthanagarh	1.37	4.5	rectangular	8?	right bank of Karatoya
Kalinganagara (?)	Sisupalgarh	1.36	4.7	square	8	right bank of Bhargavi
Ujjayinī	Ujjain	0.875	3.8	pentagon	8	right bank of Sīprā
Kānyakubja	Kanauj	0.69	3.4	triangle	?	right bank of Kālīnādī
?	Balirajgarh	0.45	2.7	trapezoid	4?	
Vijayapuri	Nagarjunakonda	0.42	2.6	trapezoid	2	right bank of Kistna
Vichi (grāma)	Bhita	0.26	2.1	square	?	south of the Jumna
(New)Rājagṛha	Rajgir	0.25	2.1	square	?	before gates of (old-)R.
?	Nandangarh	0.20	1.8	square	?	
Airikina	Eran	0.18	1.7	ellipse	?	left bank of Bina
Vaiśālī	Basarh	0.14	1.5	rectangular	4?	

A review of the cities listed above shows that Early Historic city-builders preferred to build geometrically regular walled cities on riverside sites. Yet, the only city which somewhat resembles the prescriptions (Sisupalgarh) of the earliest extant text on urban planning (Arthaśāstra); predates it by atleast a century and is from a different region.



*Figure 2-97: The layout of the city walls and city gates of Early Historic Indian cities mentioned in the Pali canon as being of the time of the Buddha*  
Source: Schlingloff, 2012



*Figure 2-98: Brick revetted ramparts at Kaushambi dated to around 900 BCE onwards*  
Source: IGNOU, 2016 after Sharma, 1960



*Figure 2-99: Wooden palisades at Pataliputra dated to around 600 BCE onwards*  
Source: IGNOU, 2016 after Allchin, 1995

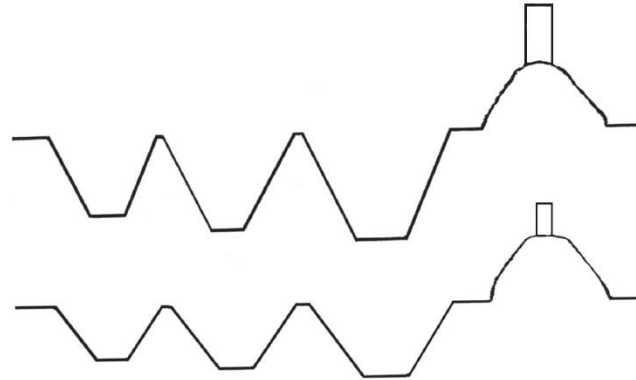


Fig. 4: Section as prescribed (max/min.) in the Kauṭīliya Arthaśāstra

Fig. 5: New Rājagṛha

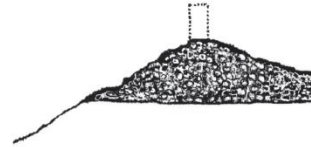


Fig. 6: Vaiśālī



Fig. 7: Sisupalgarh

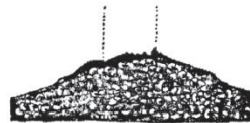


Fig. 8: Ujjayinī



Fig. 9: Kauśāmbī



10 20 30 40 50 60 70 80 90  
daṇḍa  
metre

Figure 2-100: Section of wall fortifications and moats at selected Indian Early Historic cities  
Source: Schlingloff, 2012

tribhāga-godhāmukhaṃ gopuraṃ (p. 76)

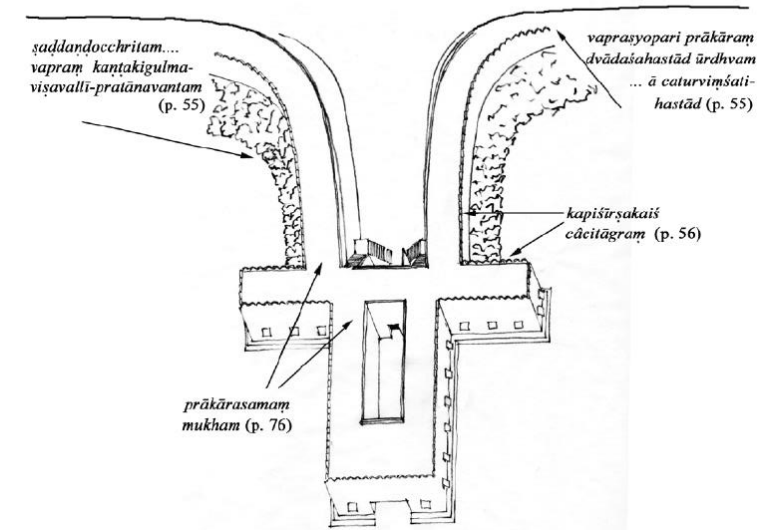
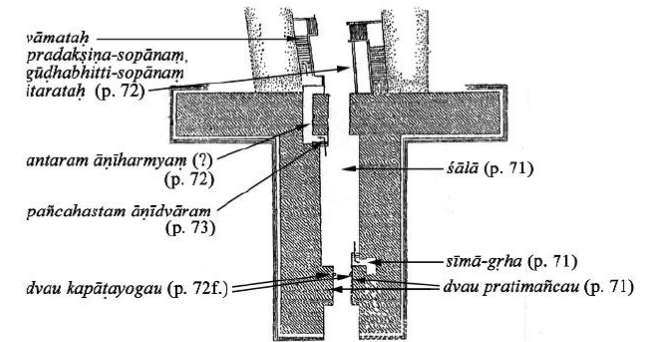
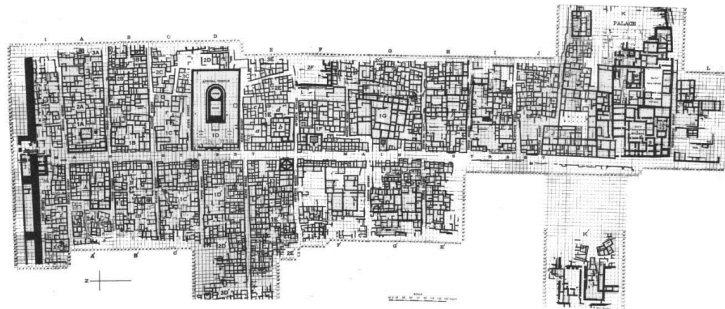


Figure 2-101: Prescription for a city-gate in the Arthashastra and the conjectural reconstruction of the city-gate of Sisupalgarh based by Schlingloff, based on the prescription  
Source: Schlingloff, 2012



Taxila (600 BCE – 500 CE) was a completely planned city with streets along the spine of the city from the north gate to the ends of the city, which are joined by orthogonal smaller streets and lanes with distinct houses (Deloche, 2007). Marshall states that the Greek layout (dated to around 200-100 BCE) of the city of Taxila was foundational to the later city as well (Marshall, 1951):

*“... city was laid out on the typically Greek chess-board pattern, with streets cutting one another at right angles and regularly aligned blocks of buildings. Notwithstanding that the city was several times destroyed and rebuilt and that many transformations were made in individual buildings, this Greek lay-out was on the whole well preserved down to the latest days of the city’s occupation.”*



*Figure 2-102: Excavated plan of Taxila by Marshall  
Source: After ASI, by Schlingloff, 2012*

#### 2.4.3.3. Practice of Urban Planning in Early Historic India

The origins of the planning at Taxila is one of the points of debate in the history of Indian town planning, with clear consensus on a Greco-Bactrian origin still not decided (Mairs, 2005); but that the settlement was planned, of that there are no doubts. Yet, many archaeologists continue to express caution and doubt at the prospects of urban planning being practiced in the Indian Early Historic cities and settlements on the mainland of the Indian subcontinent (Mairs, 2005). The range of scholarly opinions on this subject are diverse, such as Ghosh’s denial of this possibility (Ghosh A. , 1973, p. 60):

*“ ... of town-planning in the cities of the Ganga valley there is no evidence”*

This can be compared to Erdosy’s allowance for residential zoning in Early Historic settlements (Erdosy G. , 1988, p. 135):

*“ ... beyond residential zoning little can be said of the form of Early Historic cities, due to the lack of adequate exposure.”*

Thus, the support for this position is thus quite low among archaeologists working on urbanism in the Indian Early Historic period; but of significance here is the standards for planning (possibly the contemporaneous Hellenic prototypes) to which these settlements are compared.

The possibility for the diffusion of planning ideas and principles from sources outside India has been considered by scholars (Mairs, 2005); yet, the lack of adequate contemporary excavations (Erdosy G. , 1988), the scant historicity in historical Indian literature (Ghosh A. , 1973), the conflation of the periods of compilation of technical texts on architecture and planning (Malville & Gujral, 2000) etc. may have contributed to the scant historical research in this domain.

#### 2.4.4. Position Taken on Urban Planning in Early Historic India

The position taken after the review of archaeological research and literature on the urbanism of the Early Historic period in India, and especially that of the cities of the Gangetic plains, it is evident that the knowledge of durable building materials (stone, burnt bricks etc.), construction techniques, knowledge of fortifications (ramparts, gates, towers etc.), knowledge of orthogonal planning etc. was present at a variety of locations across India (from Taxila in the Northwest to Sisupalgarh in the Southeast). Yet, the absence of contemporaneous written records by these builders lead to dependence on later texts (such as the Arthaśāstra), for obtaining clarity on the intentions and procedures followed by these settlements. The existing near-contemporaneous historical sources (such as the sculptures on contemporaneous stupas, the descriptions of cities in the Buddhist canon etc.) are by artists, monks etc. who may not have been directly involved with the conception and construction of these settlements. The position that the extant literature, especially the Vāstuśāstra literature (demonstrated here to be of much later origins), could have influenced the design of these settlements cannot be supported by historical evidence. The possibility that these texts themselves (including the Arthaśāstra, Matsya Purāṇa etc.) were influenced from earlier technical texts or were derived from observations of contemporaneous building traditions, is a possibility with inadequate though historical proof.

Thus, the research asserts that indigenous systems and knowledge of urban planning existed in the Proto-Historic and Early Historic periods (as is evidenced by the excavated settlements), yet the nature of these settlements and systems is not adequately represented by contemporaneous literature; and especially not by the much later Vāstuśāstra literature.

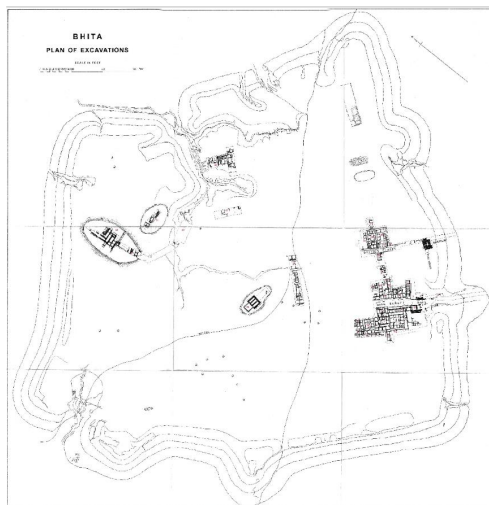


Figure 2-103: Excavated siteplan of Bhita showing streets and houses  
Source: S Varma, 2016 after Marshall, 1915



Figure 2-104: Settlements at Bhita - color-coded by estimated period of establishment  
Source: S Varma, 2016 after Marshall 1915

#### 2.4.4.1. Early Historic Urbanisation in Peninsular India

The conventional view of the development of urbanisation in Southern India as a model of development transmitted from the northern Gangetic plains has been challenged by new material discoveries and referenced interpretations that indicate rich and diverse urban patterns in South India (Basak, 2016) (Sawant & Shete, 2016) in coterminous periods. The analysis of the urbanisation of the areas ruled by the early historic dynasties in the Deccan region such as the Sātavāhanas, the Ikṣvākus etc. also illustrate the complexities of determining unitary development modes for South Indian urbanism (Skinner, 2012). The links between the construction of Peninsular Indian menhirs and dolmens from the Megalithic Age (around 2000 BCE) onwards (Singh U. , 2008), to that of the later stone temples are indicated to be older than hitherto assumed and possibly indigenously developed but these assertions are not yet conclusively established (Iniyan, 2015).

Centres of urbanism in India were diverse and frequently disconnected from each other's developments. Few sites show signs of continuous occupation, such as the site of Brahmagiri which contains archaeological traces of occupation from the Megalithic period upto the Early Historic period (Ghosh A. , 1990, p. 82).

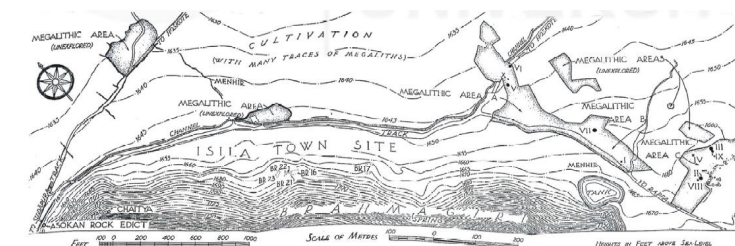
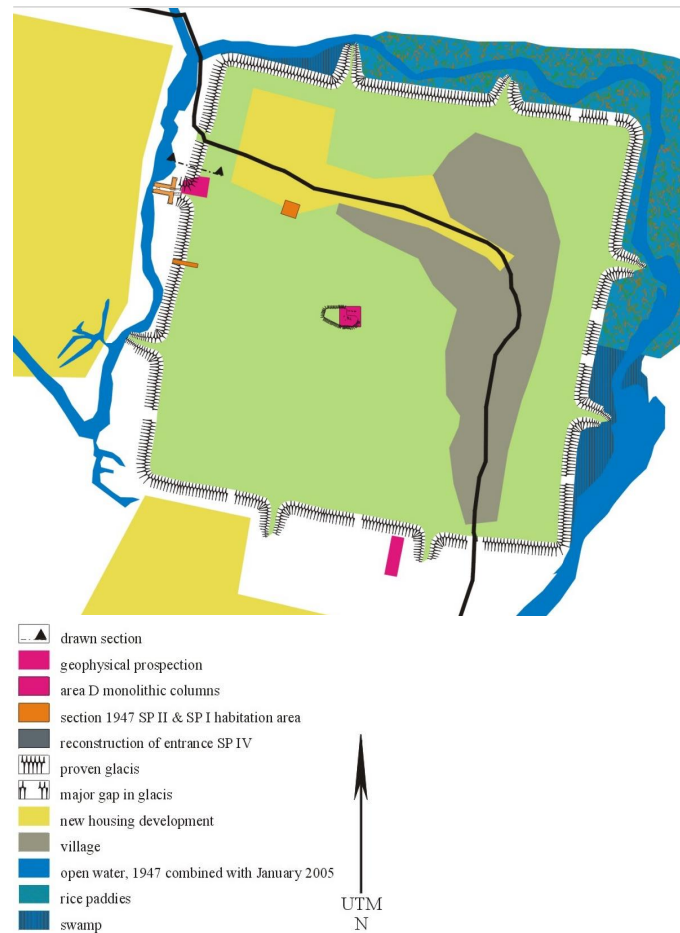


Figure 2-105: The Megalithic to Early Historic site of Brahmagiri (also known as Isila) in modern day Karnataka

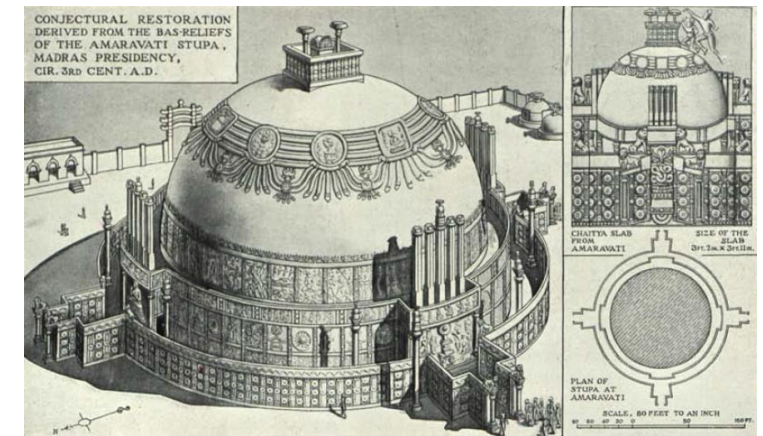
Research by M L Smith determined the date of the only known extant demonstrably planned Early Historic city located South of the Vindhyas to be around 300 BCE to 450 CE, with the northern city wall having layers datable to about 450 BCE (Smith M. L., 2006). The Garh (fort) was ringed by a natural moat, within which was found a walled settlement with eight cardinal, orthogonal streets, and discernible layers of human habitation across centuries (Mohanty & Smith, 2006). This settlement was identified with the city of Kalinganagara of the Kharavela inscription, and the city of Tosali of Ashoka's inscriptions (Mohanty & Smith, 2006).





*Figure 2-106: Excavations conducted at the site of the fortified settlement of Sisupalgarh*  
Source: Utkal University / Kiel University, 2005

Another important centre of urbanism in Early Historic South India is the city of Amaravati (previously known as "Dhānyakatakam") known to have existed from 200 BCE onwards, was the capital of the Satavahana dynasty of the Andhras and one of the most important sites of Mahayana Buddhism in peninsular India along with Nagarjunakonda. The ancient city itself is not preserved, but the mahachetiya (also known as the 'deepaladimma' or the Amarāvati Stupa) was the most important monument (main edifice built between 200 BCE and 250 CE) of the city, which may have been active until the thirteenth century (ASI, 2018).



*Figure 2-107: Conjectural reconstruction of the c. 300 CE Amaravati stupa based on local bas-reliefs by Percy Brown*  
Source: Brown, 1959

The fortified city of Nagarjunakonda was another important Buddhist centre of excellence with layers of habitation spanning from the pre-historic to the Medieval periods (Sarkar H. , 1960). The settlement consisted of a walled fort with moats, a fortified citadel area, a habitation zone and Brahmanical and Buddhist edifices outside. The site was known to be active from around 100 CE to 400 CE; and is unique since it contains rare architecture such as a tortoise-shaped brick tank for an Asvamedha sacrifice, the only extant amphitheatre in Early Historic Indian cities etc.; with several other notable features such as water tanks, cisterns, pillared halls, private residential buildings with a house-drain (connected to the city drain), a galleried tank reservoir, a large ghat etc. were also a part of this settlement (Basak, 2016).

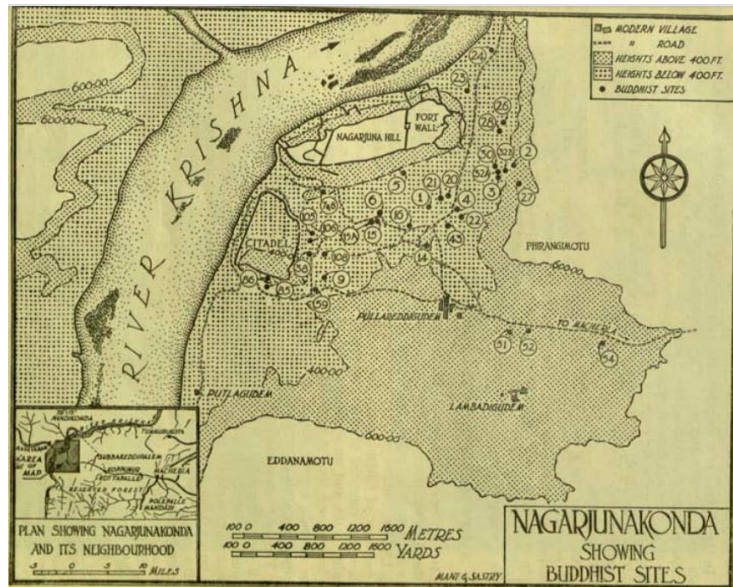


Figure 2-108: The settlement of Nagarakonda showing the Buddhist sites in particular  
Source: Sarkar, 1960

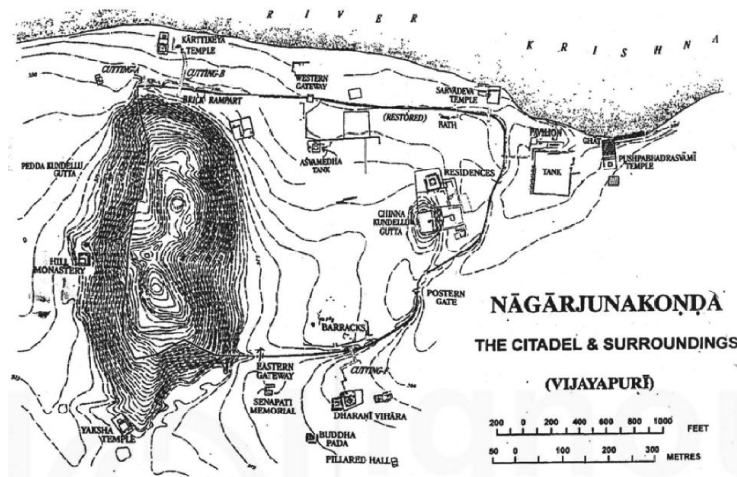


Figure 2-109: Plan of the citadel at Nagarjunakonda and its surroundings  
Source: ASI, 1957

The Southern end of India has some Early Historic urban-like centres such as Kodumanal, Pattanam, Korkai, Alagankulam, Kaveripattanam etc. but none of these centres are adequately exposed to archaeological analysis (Basak, 2016). The biggest post-300 BCE currently inhabited urban centres which find mention in the Roman Periplus as well as yield stratified material evidence are the towns of Kanchi and Madurai (which are glorified in the Sangam composition titled *Madurai-Kanchi*) (Basak, 2016). The discussions on Madurai's claim to planning has been discussed while the majority of the extant historical built heritage at modern day Kanchipuram are known to be of post-Pallava (post-300 CE) origins.

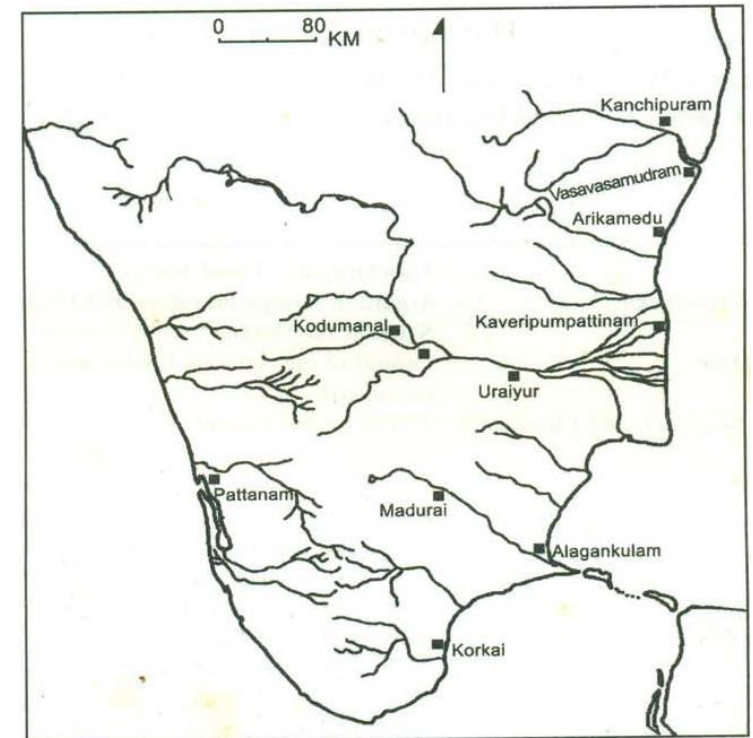


Figure 2-110: Important early historic sites in South India  
Source: V. Selvakumar and S. Darsana

The unique urban settlements on the Southern coasts include Arikamedu and Muziris, both of which were port settlements known for their trading links with the contemporaneous Greco-Roman world. Arikamedu was an Indo-Roman trading town



(identified as the port of Podouke, and known as an "emporium" in the Periplus of the Erythraean Sea and Ptolemy), on the banks of the Ariyankuppam River near modern-day Puducherry, which was active from 200 BCE to 800 CE and was also a centre of manufacture for muslin, jewellery, gold beads etc. (UNESCO, 2021).



*Figure 2-111: Historic structures at the site of Arikamedu*  
*Source: Ramsadeesh, 2011*

#### **2.4.5. Urban India in the Early Medieval Period (600 CE to 1200 CE era)**

The early medieval period in India saw the rise of comparatively stable statehoods across the subcontinent, with established regional scripts, coinage, cultures, religious cults etc. (Chattopadhyaya (ed.) B. D., 2017). Historical studies of this period (Kulke, 1995) (Singh U. , 1993) stress upon the importance of religion in the 'ritual validation' of monarchy and the cultural assimilation of different peoples to form working statehoods. The rise in Hindu monasticism through the *matha*, or Hindu monastery, from the turn of the first millennium onwards lead to an emergence of the guru as an influential public figure alongwith the institutionalization of asceticism into formalized monastic practices (Sears, 2014).

##### **2.4.5.1. Early Medieval East India**

The early medieval period saw diverse and large land grants in favour of the Brāhmanas (especially for Odisha from the 6<sup>th</sup>-7<sup>th</sup> century CE onwards (Rakshit, 2014))

since the ruling classes depended upon the ritual polity executed by the Brāhmanas for legitimization of their rule and assimilation of their ethnically and religiously diverse subjects into a single administrative framework (Kulke, 1980) (Singh U. , 1993) (Kulke, 1995).

##### **2.4.5.2. Early Medieval South India**

The published literature on the history of South India is dominated by the popular scholarly overviews (Singh U. , 2008) and of statistical studies of epigraphy by Karashima et al (Karashima (ed.), 2014) much of which elaborates from his standard earlier work (Karashima, 1984). Frameworks for the development of the Tamil state through autonomous collectives such as merchant groups and trader networks has been explored by the research and theories of R. Champakalakshmi (Champakalakshmi, 1986), which can be contrasted and supplemented by the work of Stein (Stein, A History of India, 2010) and his famous 'segmentary state' thesis. The significance of the ritual polity as an instrument of power and validation has been explored by Hermann Kulke (Kulke, 1995) (Kulke & Rothermund, 2002), and Kulke's work finds support in Singh's work (especially for Orissa) on the role of temples and caste-structures in political-religious assimilation (Singh U. , 1993). James Hetizman is the authority referred to for understanding the role of temples in developing urbanism and real estate in Tamil Nadu's medieval period (Heitzman, 1987) (Heitzman, 1987b). The literature review provides a comprehensive overview of the polycentric development of statehood in medieval South India through monarchy, trade, autonomous collectives and religion.

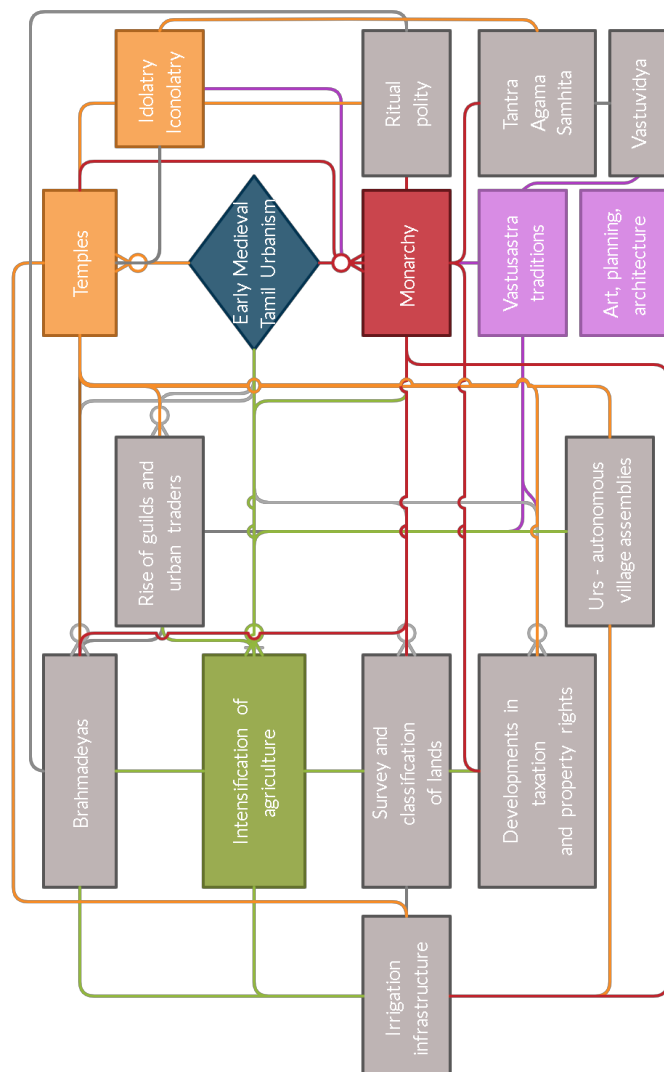


Figure 2-112: Interlinked factors for the development of urbanism in Early Medieval South India and the role of Vāstusāstra traditions

### 2.4.5.1. Spatial Planning and Urban Dynamics In Early Medieval Tamil Nadu

The interlinked development of urbanism, agrarian interests and temple management can be surmised after the review of current scholarship on the subject (Bhattacharya A. , 2014).

Conventional models for the rise of the ‘urban State’ in Early Medieval Tamil Nadu were based on monocausal dynamics such as the kin-based ‘segmentary state’ (Stein, 1980), the might and charisma of gifted Chola rulers (Sastri K. A., 1955), the tax-tribute-plunder continuum (Spencer G. , 1976) etc. all of which are now understood to be inadequate frameworks (Bhattacharya A. , 2014) for explaining the well-established and well-spread urbanism of Early Medieval period Tamil Nadu (especially for the Kaveri delta – the heartland of the Chola empire). The intensification of agriculture allowed the Tamil polities to progress beyond sustenance-based administrative and cultural frameworks (Frasch, 2011). This intensification was brought along and influenced many other phenomena in an interlinked fashion.

Bhattacharya describes the interlinked development (Bhattacharya A. , 2014) of landholding patterns, taxation, economic redistribution etc. (Stein, 1961). The analysis of Nitz draws upon Kulke’s documentation of the spatial legitimisation of monarchic rule via the creation of planned settlements in Orissa (Kulke, 1980). Nitz finds similar processes in settlements around Thanjavur in Tamil Nadu which have roots in the medieval era rule of the Cholas (Nitz, 1992).

Frasch argues that conventional historiography of the martial and urban miracle of the state under the Cholas has undergone various developments (Frasch, 2011), from the initial leader-charisma driven model (Sastri K. A., 1955), the drivers of which are recognized to be the state investments in means of irrigation (Srinivasan C. T., 1999) and standardisation of surveys, taxes etc. (Vasudevan, 2003).

The “Brahman headed agrarian cooperations” known as “Sabhas” alongwith the autonomous local village assemblies known as “Urs” functioned as administrative as well as institutional sub-units (Karashima, 1984) which handled matters as diverse as landholdings (Subbarayalu, 1997), negotiations with trade guilds (Ramaswamy, 2004), control-management of irrigation canals (Gurukkal, 1986) etc.

#### 2.4.5.1.1. Irrigation Infrastructure

The State’s investments in irrigation and agriculture are historically evidence to have increased in the periods preceding 1000 CE; with extensive development of waterways to fields (Frasch, 2011), initiation of tank building at settlements (Heitzman,



1987a), financing of irrigation measures (Heitzman, 1997), religious consecration and support of such infrastructure (Sanderson, 2009), transfer of rights to construct and maintain such structures to local village assemblies (Hall, 1980) etc. The direct and indirect involvement of the temples and village assemblies in the transactions regarding irrigation and irrigation facilities (Chaturvedi, 1968), the patronage of kings (Srinivasan C. T., 1999), the advancements made in irrigation technology by hydraulic and civil engineers (Frasch, 2011) all combined together to establish a strong resource base for making agriculture more advanced and allowing for complexity in societal and economical frameworks to arise (Bhattacharya P. K., 2012)

#### 2.4.5.1.2. Survey and Classification of Lands

The standardisation of the lands of Tamil Nadu is generally attributed to the Chola ruler Raja Raja Chola (r. 985 CE – 1014 CE) who is understood to have established an administrative system for the country which was divided into various districts from whom revenue was collected on the basis of systematic land surveys (Vasudevan, 2003, pp. 62-63). Bohle identifies at least three structural innovations as being key to the establishment and later disintegration of the State in Early Medieval Tamil Nadu and later (Bohle, 1985):

1. Centralised integration and development of hydraulic systems and networks
2. State-sponsored and reviewed land classifications and surveys
3. Integrated revenue assessment and collection by localised bureaucracy

These institutional reforms are not novel or unfeasible, as is understood by their codification and prescription in the much earlier 300BCE-300CE work Arthashastra, yet, the scale of implementation and the sustainable integration of these systems through supporting instruments such as the village assemblies, trade guilds, *brahmadeya* and temples were developments which attained their peak in the Chola period of reign in post-500 CE South India (Sastri K. A., 1935). The studies of Nitz (Nitz, 1992). Bohle (Bohle, 1985), Heitzman (Heitzman, 1987b), Subbarayalu (Subbarayalu, 1997) and Stein (Stein, 1961) demonstrate the importance given to lands as property, its accurate assessment, and the collection of appropriate revenue from the landholder in sophisticated forms of ownership and leases in post-1000 CE South India.

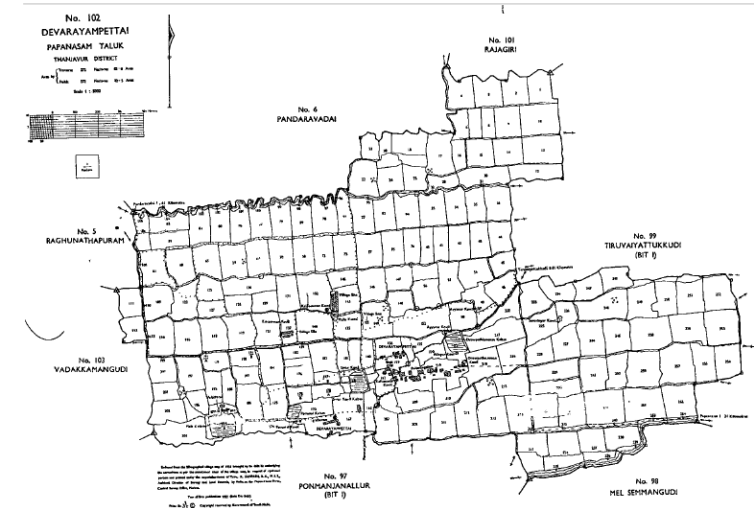


Figure 2-113: Surveyed cadastral map of 1932 for Devarajampettai township of Thanjavur district  
Source: Nitz, 1992

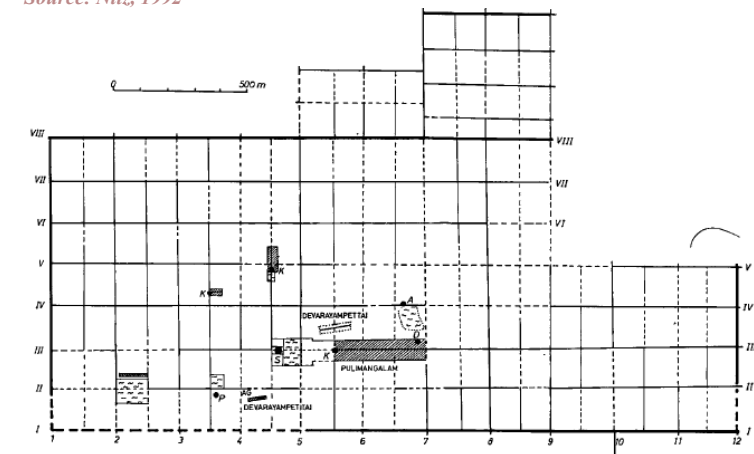


Figure 2-114: Reconstruction of medieval Devarajampettai's field-survey pattern by Nitz  
Source: Nitz, 1992

#### 2.4.5.1.3. Temple Town Planning

The literature on the planning and establishment of temples in medieval era Tamil Nadu (Kulke & Rothermund, 2002) (Singh U. , 2008) is rich with references to their roles in urbanism. The temple is considered to have managed multivariate functions in the Early Medieval Chola State, many of which were primarily economic and profit-bearing without being overtly constituted so (Stein, 1960). Stein identifies the temple in the Chola state as deriving earnings from religious endowments through the following means (Stein, 1961):

- 1) investment in irrigation infrastructure
- 2) loans to commercial guilds or clans
- 3) loans to individuals and village assemblies

These temples were also the interface for the corporate management of endowed lands by the priestly classes in brahmadeya-only assemblies based in tax-free residential lands (Gurukkal, Medieval Land Rights: Structure and Pattern of Redistribution, 1978).

The medieval temple towns of peninsular India, in particular those of Tamil Nadu, are considered to have been planned on the basis of the prescriptions of Vāstusāstra (Ayyar, 1913) (Dutt B. B., 1925) (Dagens, 2007). The spatial configurations of seven medieval temple towns in Tamil Nadu (of specifically Śaiva origins and monocentric origins), i.e. Madurai, Tiruvannamalai, Chidambaram, Tiruvarur, Nagapattinam, Tirunelveli, and Tiruchengode were quantitatively analysed by Thilagam and Banerjee through the frameworks of space syntax theory to identify the significant features of their urban space (Thilagam & Banerjee, 2016). Their research identified the type of spatial development to be the “Hindu urban genotype”, the significant features of which they listed as (Thilagam & Banerjee, 2016):

47. Significance of the center
48. Emphasis on cardinal directions
49. Axial organization
50. Concentric pattern of path of circumambulation or processions

The common characteristics of these towns were (Thilagam & Banerjee, 2016):

1. a high degree of axiality
2. more spatial synchrony
3. regular settlement pattern
4. high level of connectivity with integration cores
5. centered on the temple
6. highly intelligible spatial structures

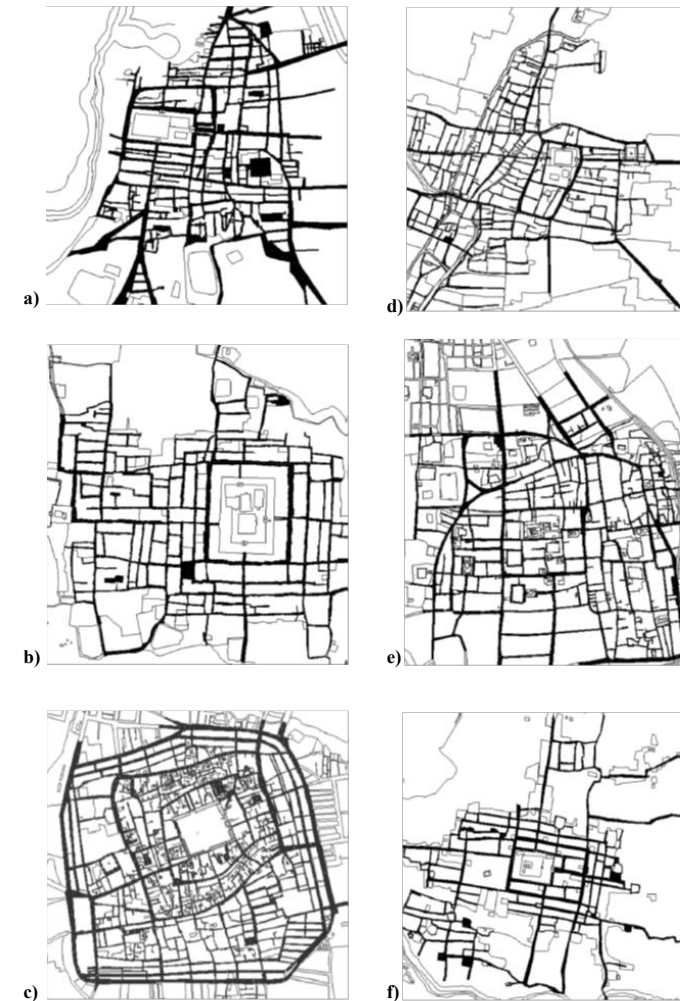


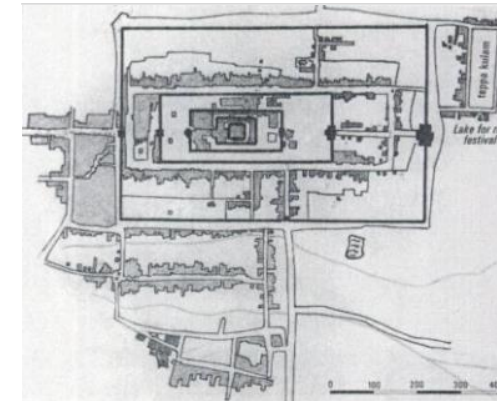
Figure 2-115: Convex maps of the spatial structure and network of the towns of a) Tiruvannamalai b) Chidambaram c) Madurai d) Tiruvarur e) Nagapattinam f) Tirunelveli  
Source: Thilagam and Banerjee, 2016

These are the very parameters used to describe towns and other settlements in the Vāstuśāstra texts known to have South Indian origins, such as the Mayamata and the Mānasāra, which are also the earliest Vāstuśāstra texts to prescribe the templates or plans for settlements. The features derived through the quantitative studies above are fairly common across all the Early Medieval temple towns of Tamil Nadu; but despite the wealth of literature that asserts this relationship (specifically as a prescriptive relationship between texts and towns) as an axiom (Chakrabarti, 1999) (Acharya P. K., 1946) (Dutt B. B., 1925) (Ayyar, 1913), complete adherence between one text and one town is still to be found. Literature tends to describe the generalized rules and conceptual guidelines that these towns may have followed, such as the works of Nagaswamy (Nagaswamy, 1984; Gros & Nagaswamy, 1970), Michell (Michell, City as Cosmogram: The Circular Plan of Warangal, 1992), Nitz (Nitz, 1992), Palani (Palani, 2019) etc.; but has not established complete adherence thus far.

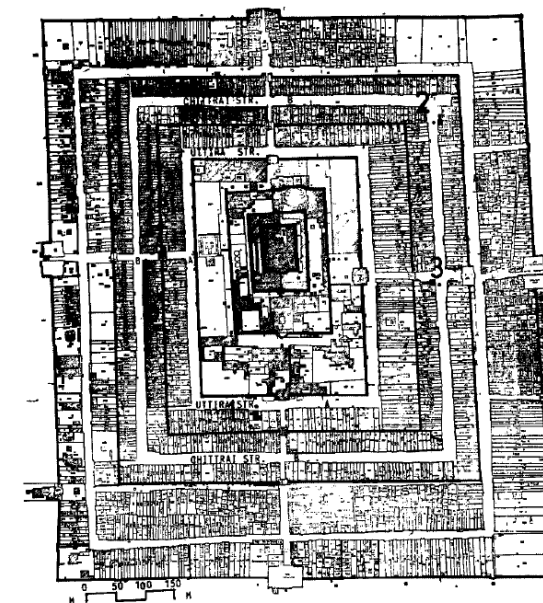
The six towns (not including Tiruchengode due to its lack of availability and smaller urbanized area) were known to be inhabited at different periods of time ranging from:

- a) Before 300 BCE – Madurai (Zvelebil, 1992, p. 27) and Nagapattinam (Kulke, Kesavapany, & Sakhuja, 2009, pp. 102-104)
- b) Before 100 CE – 500 CE – Chidambaram (Kulke & Rothermund, 2002, p. 145)
- c) Before 600 CE - 700 CE – Tiruvarur (Ghose R., 1998) and Tiruvannamalai
- d) Before 1064 CE – Tirunelveli (Caldwell, 1881)

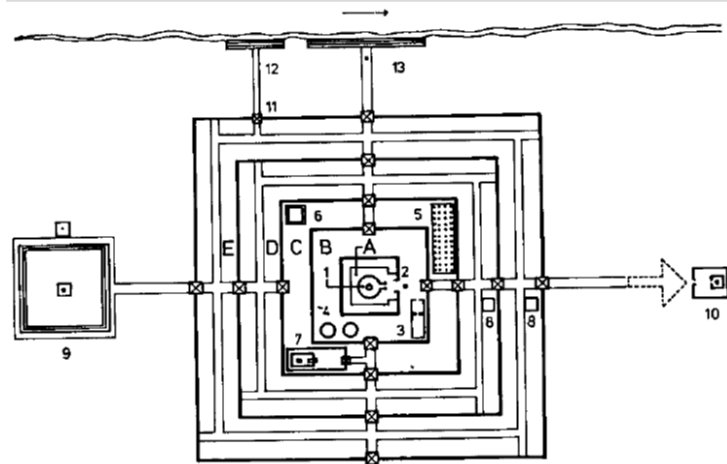
The prescriptions of the Arthaśāstra (taken to be compiled between 300 BCE and 300 CE (Olivelle, 2013)), thus, could not have influenced the planning and establishment of the cities of Madurai and Nagapattinam. The Arthaśāstra did not prescribe norms for settlement planning explicitly based on Vāstuśāstra or the Vāstupuruṣamaṇḍala (Bafna, 2000); thus the Matsya Purāṇa or the Brihat Samhita (more consistently compiled and reliably datable contemporaneous texts) could be referred to, but both these texts discuss Vāstuvidyā at the level of building-complexes (Bhattacharya T., 1947) and do not discuss settlement planning on the basis of vāstu frameworks. The Pratiṣṭhāntaras of the Śaiva Siddhānta tradition are not known to have been in popular circulation in Tamil Nadu by 900 CE (Sanderson, 2012), by when the majority of the aforementioned towns listed are known to have been fairly well established (Karashima (ed.), 2014). The rise of the direct and indirect mentions of Vastusastra in general South Indian literature is also seen to increase in frequency after 1000 CE from virtual absence. Thus, the urban centres of Early Medieval Tamil Nadu were probably established and growing much before the advent of Vastusastra that could seek to explain and formalise the nature of these settlements.



*Figure 2-116: Topographical map of Tirunannayanellur - a small temple town of the Chola Empire*  
*Source: Nitz, 1992*



*Figure 2-117: Detailed plan drawing of the large and popular temple town of Shrirangam in Tamil Nadu*  
*Source: Nitz, 1992 after K, Fischer, M. Jansen and J. Pieper, 1987*



**Legend**

- A, B, C Inner *pakramas* of the temple
- D, E Residential areas
- 1 *Mulasthan* (cellar) with idol of main deity
- 2 Flagpole
- 3 *Vahana Mandapa* (treasury and pavilion for wooden temple cars of the main deity)
- 4 Office
- 5 Hall of a Thousand Pillars (*rajasabha*, i.e. royal congregation hall)
- 6 Temple pond
- 7 Shrine of the companion goddess to the main deity
- 8 *Ratha Mandapa* (two-storeyed pavilion from where the cult idol of the main deity is moved on the temple car (*ratha*))
- 9 *Teppakulam* (pond for the 'raft festival')
- 10 Temple of a 'related' deity
- 11 'Gate of corpses'
- 12 Cremation *ghat* (terrace steps) along sacred river
- 13 Ritual bathing *ghat*

Figure 2-118: Schematic layout of a typical medieval South Indian temple town  
Source: Nitz, 1992 after K, Fischer, M. Jansen and J. Pieper, 1987

## 3. Analysis, Discussion and Conclusions

### 3.1. Analysis

#### 3.1.1. Initial Analyses

The initial methods of analysis used to determine compliance of early settlements with *Vāstuśāstra* are:

- 1) Assertion: contemporaneous local assertions (preferably by founders themselves) of compliance followed with respect to settlement planning (on extant historical media)
- 2) Correspondence: correspondence of the built features of settlements (preferably described in technical terms or via *Vāstuśāstra*-specific ontology by the founders themselves) in a particular region with norms as specified in contemporaneous discrete texts (preferably belonging to the same region)

The qualifying conditions attached to the basic criteria of assertion and correspondence are derived from the historical methods used for source criticism (Garraghan & Delanglez, 1946) and are intended as a means of cross-referencing, historicising and validating the claims through domains other than literature.

Authors such as Dutt (Dutt B. B., 1925), Ayyar (Ayyar, 1913) and Raz (Raz, 1834) have already attempted to provide the validation of these claims through extensive literature reviews, but their studies are not supported by multidisciplinary reviews of material evidence, by authors such as Ghosh (Ghosh A., 1973) and Erdosy (Erdosy G., 1988) whose analysis of archaeological and epigraphic evidence led them to criticize the high importance given to textual testimony in the study of Early Historic Indian architecture and planning. Thus, the initial analysis attempts to evade the *ipse dixit* fallacy by collecting contemporaneous material and historical evidence for local claims by technically informed commentators on extant historical media.

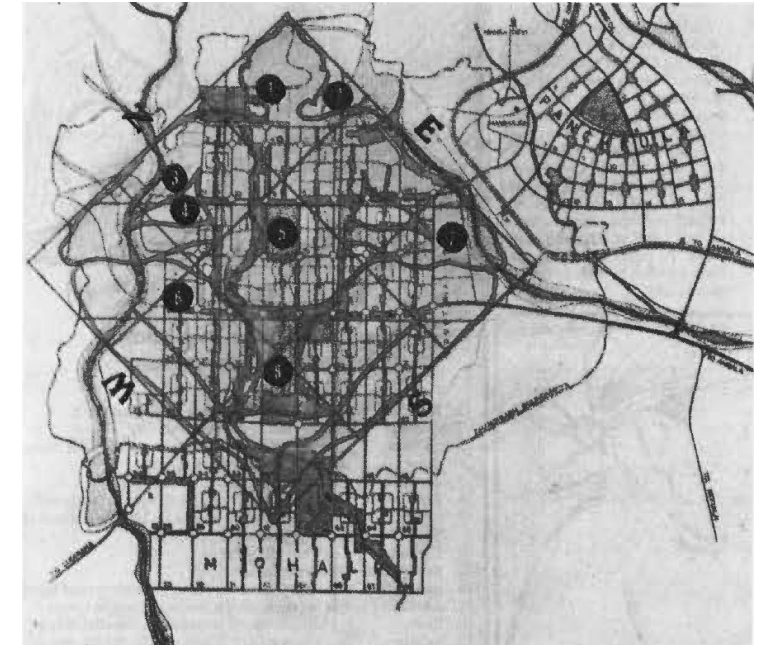


**Table 3-1: Examination of contemporaneous local assertions of compliance with norms for settlements considered to be Vāstuśāstra-compliant in popular literature**

Parameter	Estimated period of founding	Local contemporaneous literature on settlement planning	Local contemporaneous inscriptions on settlement planning	Observation on planning of settlements
Settlement				
Indus Valley culture settlements	3000 – 1300 BCE	No decipherable written records	No decipherable records	Settlements display ordered plan
Rigvedic culture settlements	Pre – 1000 BCE	Pastoral, oral, non-urban culture	No confirmed epigraphic mentions	No confirmed archaeological records
2nd wave urbanization settlements	1000 BCE onwards	Literature references post-date founding of settlements	No confirmed epigraphic mentions	Some settlements display ordered plan
Uttaramerur	~ 750 CE onwards	No contemporaneous local claims in literature	<b>Inscriptions about compliance with Āgamic rules for temples</b>	Some settlements display ordered plan
Medieval-era Tamil temple towns	300 BCE – 1100 CE	No contemporaneous local claims in literature	No confirmed epigraphic mentions	Some settlements display ordered plan
Settlements in Indochina	700 CE onwards	No contemporaneous local claims in literature	No confirmed epigraphic mentions	Settlements display ordered plan
Jaipur	1726 CE onwards	No claims for Vāstuśāstra in contemporaneous literature	No confirmed epigraphic mentions	Settlements display ordered plan
Chandigarh	1953 CE onwards	No claims for Vāstuśāstra in contemporaneous literature	No confirmed epigraphic mentions	Settlements display ordered plan
Maharishi Vedic City	2001 CE onwards	<b>Published assertions of Vāstuśāstra compliance</b>	<b>Extant inscriptions of Vāstuśāstra compliance</b>	Settlements display ordered plan

The analysis tabulated above posits that only Uttaramerur and Maharishi Vedic City provide evidence of contemporaneous local technically informed assertions for their compliance with the norms of Vāstuśāstra on settlement planning. This excludes even the popular candidates Chandigarh (due to the attribution of an invented post-facto rationale (Chakrabarti, 1999, pp. 196-198)) and Jaipur (for which, despite the ubiquitous later literature, no contemporaneous court records or other technical documents corroborating

its planning process survive (Sachdev & Tillotson, Building Jaipur: The Making of an Indian City, 2002)).



**The Chandigarh Master Plan overlaid by Vastu Purusha Mandala — the most potent architectural mechanism providing a blue-print for building in Vastu Shastra Legend:**  
 (1) Capital Complex symbolises head — coincides with the head of the macrocosmic Purusha.  
 (2) Sukhna Lake occupies E/NE corner, a sacred place for water and meditation. (3 & 4) The PGI and Panjab University — located in the North where the causative planet is Mercury (Budha) attributed health (treasure of health and knowledge). (5) The City Centre, Sector 17 — occupies the heart of the city. A recognised place for administration/assembly and temple of Lord Brahma in an ancient city. (6) Cremation ground — placed in N-W direction which was marked for the same purpose and Chandalikas in an ancient city. (7) Industrial Area — suitably located in South-East belt governed by Agni. (8) South-west, South and West zones favourably placed for living purposes (sleeping, eating etc).

**Figure 3-1: Invention of a Vastu rationale behind Chandigarh**  
 Source: Saini, 1996 via Chakrabarti, 1998

In fact, J. S. Smith in his analysis of the city of city of Madurai, arrives at the following conclusions (Smith J. S., 1976, p. 2):

*Within the complexities of the dense three-dimensional fabric exists a significant, imageable pattern - most importantly, an expanding series of concentric streets about a central temple complex. Nowhere visible as a whole, the organization is experienced only gradually over time.” ... “In terms of town layout, the careful geometry of the imbedded [sic] mandala does not necessarily translate into a literal ground plan. As a diagram, it explains rather than represents. Madurai is not a city of straight lines and right angles; ...”*

Also of particular interest is the fact that none of the classic treatises such as the Mayamata or the Mānasāra make explicit reference to any known historic settlement, in the form of a case study or application, as having been planned as per the norms described in the texts. Dagens attributes this to the attempt of the texts to retain the status of being ‘divinely revealed’ texts (like the Vedas are taken to be), thus preventing the use of historical and human examples which would make profane and secular the divine and esoteric knowledge that these texts seek to expound (Dagens, 2007).

### 3.1.1.1. Assertion – Estimated period of founding

The settlements were found to have been established across a wide spectrum of periods; both before and after the three most influential texts in the Vāstuśāstra corpus were estimated to have been composed, i.e.:

1. Arthaśāstra : between 300 BCE and 300 CE

Earliest text to discuss settlement planning and mentions Vāstuvidyā separately

2. Gargi Samhita : around 25 BCE

Earliest referred (at least partially) extant text in contemporary Vāstu treatises

3. Pīṅgalāmata : 450 CE – 900 CE

Earliest extant text that discusses settlement planning through Vāstuśāstra frameworks

This list does not include the prosaic descriptions of cities and forts from other literature such as the Mahabharata (which portions has been examined and dated by scholar-historians (Lad, 1979)) or the Ramayana (which portions have been considered post-100 CE interpolations by some archaeologist-historians (Sankalia, 1973)), and the post-200 CE texts that also describe cities and forts such as the plays of Kālidāsa, Bāṇabhaṭṭa etc.

Thus, all the settlements belonging to the Harappan cultures, the Rigvedic cultures and the Early Historic Gangetic cultures, all of which pre-date the 300 BCE period, cannot be considered as having benefited from the technical advice dispensed in the above-listed texts (despite the literature that supports such perspectives for the Harappan cultures (Bisht, 1999) (Kak, 2005), for the Rigvedic cultures (Dutt B. B., 1925), the Early Historic Gangetic cultures (Acharya P. K., 1933) etc.).

The historical evidences for urbanisation (such as from Rajgir, Kaushambi, Sisupalgarh, Taxila etc.) in India in the pre-300 BCE period is definite enough to warrant the conclusion that the sub-continent had witnessed various prototypes of urbanism much before the time of the Arthaśāstra.

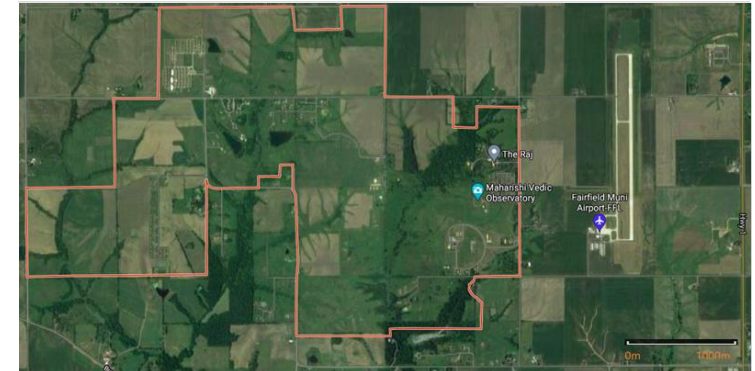
### 3.1.1.2. Assertion – Literature – Maharishi Vedic City

Maharishi Vedic City is a city in Jefferson County, Iowa, United States with about 8.81 square kilometres of land area and a population of 1295 people (Maharishi Vedic City, 2010). The city was incorporated in 2001 and is known to be built on the principles of Maharishi Vastu Architecture (MVA) (Maharishi Vedic City, 2010). The city is constructed by the Maharishi Global Construction LLC, a U.S.-based developer of MVA-compliant homes and settlements (Kissel, 2005).

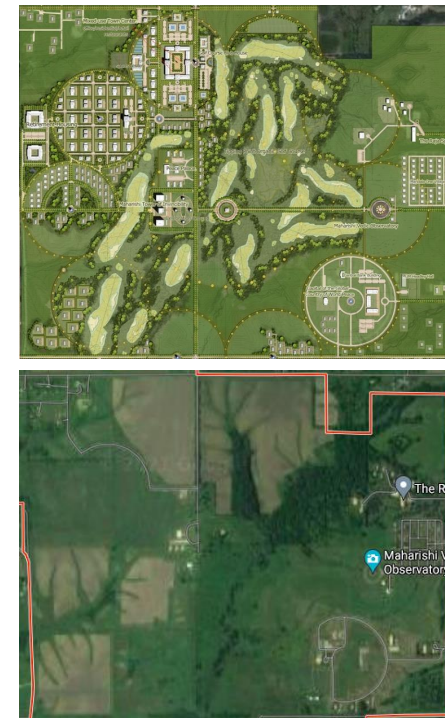
Maharishi Vastu Architecture (MVA) is a set of architectural and planning principles assembled by Maharishi Mahesh Yogi based on the Mayamata, Mānasāra and the Sthapatya Veda (an apparently lost text which was reassembled by Maharishi Mahesh Yogi along with experts of Sthapatya Veda) to create the following trademarked systems – “Maharishi Vastu” Architecture, “Maharishi Sthapatya Veda”, “Fortune-Creating” buildings, “Maharishi Vedic” Architecture (Maharishi Vastu Architecture, 2008).

The masterplan for the city was designed (by a Baltimore-based urban design firm called Design 3 International) in strict accordance with “the Maharishi Vedic principles of master planning” (Design 3 International, 2018). Some of the key features of this system of architecture and planning includes (Egenes, 2006):

1. East-facing buildings
2. Kalash on top of roof
3. Brahmasthān at centre
4. Square/rectangular sites
5. Vāstu (home site) fence
6. Right dimensions (calculated according to esoteric formulae)
7. Natural materials (interpreted as ‘green’ or eco-friendly non-toxic materials)
8. Cardinaly oriented grid of roads

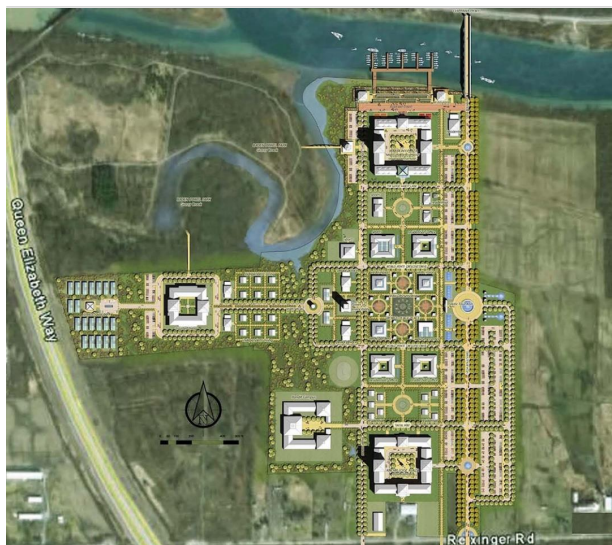


*Figure 3-2: Land boundaries of the Maharishi Vedic City as of 2018  
Source: Google Maps, 2021*



*Figure 3-3: The proposed masterplan of Maharishi Vedic City as compared to on-site development as of 2018  
Source: Design 3 International, 2018; Google Maps, 2021*





*Figure 3-4: Masterplan for the Niagara waterfront area at Maharishi Vedic City*  
Source: Design 3 International, 2018



*Figure 3-5: Geometric layout of the masterplan of Maharishi Vedic City*  
*Source: After drawings by Design 3 International, 2018*

It is observed that the masterplan for the city as well as the distinct plans for the neighbourhoods do not adhere to any known template or plan as suggested in the Mānasāra or the Mayamata; and the site shape is also deviant from the regular shapes prescribed in these texts. The principles outlined earlier are generic Vāstu principles and do not make the Maharishi Vastu system unique from its supposed inspirations (the Mayamata, the Mānasāra etc.), despite the branding and copyrighting of intellectual property. The descriptions of the city by its founders offer no technical terms or classification for its planning to allow relevant comparisons with the referred texts. Many key prescriptions found in the aforementioned texts, such as those for the establishment of temples, palaces, gates, moats, tanks etc. are not found to be discussed (let alone be built). The urban designers and city officials make direct references to Vāstusāstra or 'Vedic' principles only through the trademarked labels of Maharishi Vastu or Maharishi Shatapatha Veda, the technical rigor or antiquity of which is not available for commentary, thus preserving the claims of complying with Vāstusāstra and the Vedas but as understood via the Maharishi Vastu framework. Thus, it is difficult to establish that the settlement planning followed in Maharishi Vedic City complies with prescriptions as found in the Mayamata or the Mānasāra or any other known extant Vāstusāstra text or tradition.



### 3.1.1.3. Assertion – Inscription - Uttaramerur

Uttaramerur is currently a panchayat town in the Kanchipuram district of the state of Tamil Nadu. The older portion of the town is considered to be established by the Pallava king Nandivarman II (720–796 CE) as a *Brahmadeya* village donated to *brahmins* of the Vaikhāṇasa sect around 750 CE (Subramaniam, 2008). The village has many old Hindu temples, of which the Sundaravarada Perumal temple (almost 1200 years old), is of special importance to the historical development of Vāstuśāstra in South India. The town is also historically significant for its sophisticated representative assembly system (known as the *sabhā* in Early Historic Tamil Nadu), the details of which are known through the c. 10<sup>th</sup> century inscriptions on the rectangular stone *sabhā-mandapa* (which historians consider to originally have been an assembly hall upon which a Vishnu temple has now been erected); which described the assemblies elected for maintaining the village tanks, orchards etc. and also described other duties such as dredging of tanks, laying of roads, land sales etc. (Thapar, 2004, pp. 375-377).

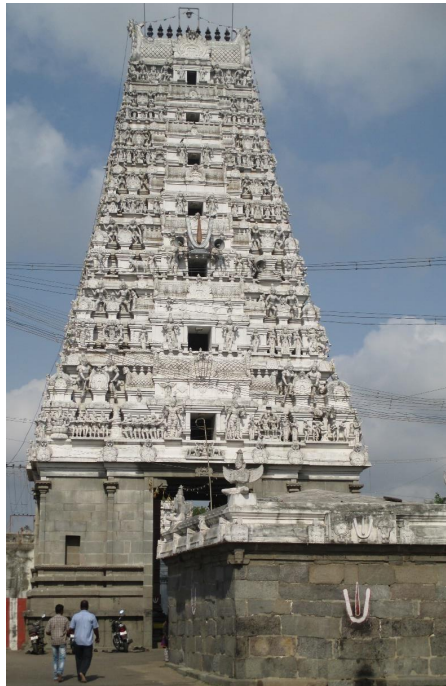


Figure 3-6: Gopuram of the Sundaravarada Perumal temple at Uttaramerur  
Source: SMT Sriram, 2016

Nagaswamy considers that the detailed and systematic naming of the temples, Brahmin colonies, main streets and canals demonstrates the planned establishment of these features (Nagaswamy, 1984). The following features of the village are taken by Nagaswamy to bolster the claim that Uttaramerur was planned and built by people familiar with the prescriptions of the agamas, especially the norms of the Marichi Samhita (Nagaswamy, 1984, pp. 41-44):

1. location of the original *sabhā-mandapa* to the northeast of the village's centre (*brahmasthāna*),
2. the location of the village's primary Vishnu temple in the western quarter facing east,
3. the building of various temples to gods such as Shiva, Subrahmanya, Krishna, Raghava etc.
4. the compliance of the temple rituals and worship at the Sundaravarada Perumal temple with the Marichi Samhita's prescriptions
5. the *navamurti-pratishtha* of Sri Vishnu in a two-storeyed format (unique both in its adherence to the Marichi Samhita as well as absence of this type in any temple anywhere else)
6. the location of the tank in the western portion of the village
7. the inscriptional evidence of the village's demographics (mostly Brahmin residents with other castes residing in the vicinity to serve them) agrees with the agama's definition of the term 'grama' as a settlement predominantly for the priestly classes with other classes in positions of service residing nearby

These features are found described in similar prescriptions in the Marichi Samhita, on the basis of which the conjectural reconstruction of the planned layout of the early village of Uttaramerur by Gros and Nagaswamy was attempted (Gros & Nagaswamy, 1970). The Marichi Samhita classifies settlements as follows (Nagaswamy, 1984):

1. grāma
2. agrahāra
3. nagara
4. pattana
5. kharvata
6. kutika
7. senāmukha
8. rājadhāni
9. śibira

Of particular interest is the term ‘*agrahāra*’, which is used particularly in the states of Andhra Pradesh, Karnataka, Tamil Nadu and Kerala to denote the tax-free residential land granted by royal or noble families (sometimes with the royal income associated with it) to Brahmins or priestly families for the maintenance of temples or pilgrimage sites or the recitation of Vedas (Macdonell A. A., 1924, p. 9) (Talbot, 2001, pp. 89, 139, 161, 169, 179). The earliest description of such a settlement in South India occurs in the *Perumpāṇāruppaṭai* - a Tamil poem composed around 190-200 CE by poet Uruṭṭirankannanar for the chieftain Tonataiman Ilantiraiyan of the Kanchi territory (Zvelebil, Tamil Literature, 1974, pp. 23, 42). Such settlements were also known as *mangalam*, *agaram*, *brahmapuram*, *agrahara*, *agra-brahmadeya*, *brahmadesam* and *brahmamangalam*; though the term ‘*agrahāra*’ and the practice of granting such lands is known to have become particularly popular as a meritorious act among the royalty of early medieval Tamil Nadu (Singh B. K., 2011) (Talbot, 2001). This establishes the local and contemporaneous nature of the classification of settlements in the Marichi Samhita (which may have risen as prescription through description of then-current practices).



Figure 3-7: Inscriptions at the Sundaravarada Perumal temple at Uttaramerur  
Source: Subramaniam, 2008

### 3.1.2. Epistemology

#### 3.1.2.1. Epistemology and Features of ‘Śāstric’ Traditions

The word *Śāstra* word is generally used as a suffix in the Indian literature context, for technical or specialized knowledge in a defined area of practice (Lochtefeld, 2002, p. 626). References to the term Sastra can be found in the Rīg Veda, in Pāṇini’s *Aṣṭādhyāyī* as well as the *Nirukta* by Yaska; but this tradition of Indian literature often has unclear periods of composition, authorship and authenticity. Pollock’s work comments on the changing nature of the Vedas and related ritualistic texts towards a discourse of social power from an original discourse on ritual; especially due to the epistemological positions and hermeneutics as imposed by the *Mīmāṃsā* school (Pollock, 1990). The features of Sanskrit culture, especially literary culture, which Pollock finds prominent for their contribution to the reproduction of social power through ritual norms are (Pollock, 1990, p. 317):

- 1) the explicit rule-boundedness of Sanskrit cultural production;
- 2) the authority of "tradition" (*smṛti*), and
- 3) the absence of historical consciousness as indicated by the absence of indigenous narrative historiography

These are important features for the discussion on śāstric epistemology, which derives its stance on the “eternal, ahuman and beginningless” nature of the knowledge it describes, from the traditional Hindu stance on the knowledge as revealed in the Vedas (Pollock, 1985). Since the Indian śāstras consistently make claims to Rīgvedic origins or of being divine revelations; they do not subject themselves to historicism or other forms of critical validation (Pollock, 1985). In fact, this epistemological feature is summarised by Pollock as (Pollock, 1985, p. 512):

“Given the postulate of its *a priori* status, *śāstra* must exist *primordially*.”

In the vein of Pollock’s criticism, the three major epistemological constraints observed which retard historicised technical criticism of the *Vāstusāstra* tradition are:

1. Unconditional acceptance of the authority of ‘*Smṛti*’ as knowledge and concomitant absence of historicised meta-criticism in succeeding literature
2. Deliberate dominance of oral transmission of knowledge in Early Historic period
3. Criteria for validating specific knowledge as a *Śāstra* or as *Śāstric* literature

#### 3.1.2.2. Constraint – Authority of the ‘*Smṛti*’

The popularity and authority of the *Mīmāṃsā* school of Vedic hermeneutics which spread all over India demanded that the Vedas be considered as revelations ‘heard’ by the composer-sages (hence the name ‘*Smṛti*’ implying they were heard); that they were

timeless and beyond human – such that, an time, place or people referred to in the verses were not to be taken as historical markers or indicators (Pollock, 1989). This attitude towards historiography was thus embedded into the earliest known literature of the Indian subcontinent; due to which the subsequent evolution of the Vedic hymns and the attendant exegetical literature from ritual discourse to social regulations and norms could not technically be subjected to critique or investigations (Pollock, 1990). The primacy of the ‘Smṛti’ and its accompanying literature was reinforced by most of the subsequent Sanskrit metrical literature as they attempted to bestow or identify their contents with the authority of the Vedas or that of divine revelations since they were considered infallible sources of knowledge by this time (Pollock, 1985). This was often attempted through internal references to the older texts, ascription of the texts to revelation by mythic or divine entities, genealogies for the transfer of knowledge of that text from divine beings to earthly entities etc. (Pollock, 1985).

### 3.1.2.3. Constraint - Oral Transmission of Knowledge

The other major constraint was the ascription of divine status to the spoken word, such as the goddess ‘Vac’ or ‘Vani’; the practice and refinement of which was the exclusive domain of the priestly classes alone (Pollock, 1989). Thus, though the transfer of such large literary works were feats of memory; they were restricted to a certain class of people, and were constrained by the oral means of transmission mandated for both their teaching and transmission (Yano, 2006). This tendency towards recension of large bodies of collective memory into oral verse form for ease of repetition, remembrance and recitation is observed even in the non-Vedic traditions of early Buddhism and Jainism whose religious literature was codified centuries after their principal founder or prophet had passed away. The appearance of a written script in the Indian subcontinent is attributed to the time before the age of Ashoka Maurya (c. 268 BCE - 232 BCE), in whose reign the famous multi-script edicts on pillars, boulders etc. were found across India. Yet, the adoption of the written script as a medium of transfer of knowledge, that too sacred knowledge, was not encouraged as is observed by the use of oral means of instruction to students of the Vedas in Indian even today (Rathi & Aravind, 2015). This tendency has been observed by Monier Williams as follows (Monier-Williams, 1990, p. xxv):

*“And besides this may it not be conjectured that the invention and general diffusion of alphabetic writing was to Indian learned men, gifted with prodigious power of memory, and equipped with laboriously acquired stores of knowledge, very much what the invention of and general use of machinery was to European handicrafts-men? It seemed to deprive them of the advantage and privilege of exercising their craft. It had to be acquiesced in, and was no doubt prevalent for centuries before the Christian era, but it was not really much encouraged. And even to this day*

*in India the man whose knowledge is treasured up in his own memory is more honoured than the man of far larger acquisitions, whose knowledge is wholly or partially derived from books, and dependent on their aid for its communication to others.”*

### 3.1.2.4. Constraint – Criteria for Śāstric literature

This aforementioned epistemological approach leads to later scholars verifying the validity of any new knowledge or any knowledge not described in the Indian (Hindu) classical scriptures by paradoxically attempting to identify their equivalents in Vedic or Puranic sources. Pollock characterises this epistemological position on the discovery of new knowledge thus (Pollock, 1985, p. 512):

*“That the practice of any art or science, ... [and their] conformity with shastric norms would imply that the improvement of any given practice lies, not in the future and the discovery of what has never been known before, but in the past and the more complete recovery of what was known in full in the past.”*

This tendency is present in the Mayamata as well, which Dagens terms as the text’s “pretensions to universality” i.e., the attempts of the text to describe and prescribe all possible architectural iterations and possibilities renders it into an exercise on architectural taxonomy than architectural ontology. This endeavor could have been forced upon the text due to its cultural position of a śāstra text, thus having to account for all possible knowledge vis-à-vis architecture, even if it described the taxon’s name and key features alone. Dagens contrasts this with the Roman approach to architectural knowledge at around 27 BCE (Dagens, 2007, pp. xciv-xcv)

*“The Mayamata is what might be considered a revealed text ... Being revealed, the Mayamata makes no reference to any prior construction or image from which it might have extrapolated the theory it presents. ... this method differs from that of Vitruvius who had no hesitation in theorizing from actual and precise examples, thus substituting ... authority of revelation [for] that of a more concrete antiquity.”*

Thus all texts in the Vāstuśāstra genre are constrained from discussing real world examples in their contents; even when high degrees of correlations with actual building traditions and built structures are found; to preserve their śāstric claim to eternality of knowledge. Yano observes the same constraint for scientific literature in the first millennium as well, noting that (Yano, 1986, p. 20):

*“If an Indian scientist in the classical age discovered a new theory, his claim for priority could not be accepted unless he versified the formula in Sanskrit.”*

Yano offers biting criticism of this approach in his review of the methodology for determining orientation as per the Vāstuśāstra texts (Yano, 1986, p. 26):

*“We have seen how a very elaborate method of orientation and the far primitive table of shadows were coexistent in the same text of temple architecture. This is not the unique case in the history of Indian science where conservatism played a significant role. Everything handed down was preserved, including those things which had no practical use and whose meaning was no more understood. It is thanks to such Indian attitude [sic], however, that modern historian can hope to find fossilized elements of the remote past.”*

### 3.1.2.5. Epistemology of Pre-1000 CE Vāstuśāstra Texts

The majority of Indian Vāstuśāstra texts claim their origins in revelations of Gods to other minor Gods or sages who then transmit these learnings to a worshipful preceptor who is attributed authorship of the texts; this being the trend until the 1000 CE period (Pollock, 1985). The most popular choice for the source of knowledge in Vāstuśāstra texts, both Northern and Southern, is usually Vishvakarma - the divine architect (Dhaky, 1996); with some texts opting to cite Maya the *asura* architect (eg.: the Mayamata (Dagens, 2007)); or Māna the sage Agastya (eg.: the Mānasāra (Acharya P. K., 1933) ); as the preceptor responsible. The Brihat Samhita attributes the knowledge of *vāstu-vidyā*, rendered as the science of house-building by Iyer, to the god Brahma; “*for the pleasure of learned Jyotiṣakas*” according to the composer Varahamihira (Iyer, 1884). The list of the earliest preceptors of the sciences of Shilpashastra or Vāstuśāstra vary over time and the source text (Bhattacharya, 1947). The following list enumerates the 18 masters of architecture as per the Matsya Purana (Bose, 1926):

1) Bhṛigu	7) Nagnajit	13) Saunaka
2) Atri	8) Visalakṣa	14) Garga
3) Vasistha	9) Purandara	15) Vastudeva
4) Visvakarma	10) Brahma	16) Aniruddha
5) Maya	11) Kumara	17) Sukra
6) Narada	12) Nandisa	18) Vrihaspati

Some scholars, have argued that these preceptors were possibly historical persons who also began schools of architecture which followed norms (Bhattacharya T. , 2006).

### 3.1.2.6. Epistemology of Post-1000 CE Vāstuśāstra Texts

This trend sees a change in the post-1000 CE period, with a rise in texts that are attributed to or verifiably authored by humans from the historical record. The earliest known extant text that bucks the trend is the Samarāṅgaṇa Sūtradhāra which was composed around 1010-1050 CE in the erstwhile Malva region, near current-day Bhopal. This manner of composition, clear authorship and textual correspondence to

contemporary architectural praxis is found to rise with the subsequent treatises from Northwest India, such as the Aparājitaṭṭhā and Jayapṛccha (Dhaky, 1996).

This change in the epistemological approach of the later Vāstuśāstra texts (composed mostly after 1000 CE) i.e., the texts composed especially for architectural discourse; is possibly due to the involvement of the artisans themselves in the simultaneous creation of both theory and practice. These texts demonstrate a familiarity with the built form and its generative principles in a non-prescriptive manner; and seem to transcend the prescription-description divisions by engaging in the simultaneous generation of design and theory – a viewpoint championed especially by Hardy (Ravindran & Hardy, 2020):

*“So, to come back to the relationship between the text and drawings and buildings ... it is not just the matter of translating the words, because if you don’t understand the architecture, it doesn’t make any sense at all. But if you look at the words and you realise what kind of temple they are talking about, you can slowly, slowly follow it through, and that’ll give you the plan and the elevation, and you can actually draw the design from the text.”*

This shift in epistemological approach is gradual, with a marked increase after the 1000-CE period; the catalyst for which, as posited by this research, is - the iconoclastic approach (no pun intended) to architectural literature that the Samarāṅgaṇa Sūtradhāra employed. The text is unique in the history of traditional Indian literature on architecture for the following reasons (Dagens, 2007) (Hardy, Drāvida Temples in the Samarāṅgaṇasūtradhāra, 2009; Salvini, 2012):

1. Authorship is clearly being attributed to a historical person (Raja Bhojadeva)
2. Discusses architecture without explicit sectarian biases
3. Follows the composition-style of a Purāṇa and not the influential Pratiṣṭhānta style that contemporary Śaiva Saiddhāntika adherents generally followed
4. Does not expand on theoretical frameworks, including the Vāstupuruṣamandalā
5. Provides true-to-field architectural prescriptions for temples
6. Considers settlement typology and guidelines within Vāstuśāstra
7. Frames contemporary praxis and Pratiṣṭhānta norms within a holistic cohesive framework for architecture and planning

These tendencies are enhanced by later Vāstuśāstra text, thus marking clear changes from the earlier epistemological positions taken by pre-1000 CE Vāstu texts such as Hayaśīrṣa Pāñcarātra, Piṅgalāmata etc. Hardy’s research methodology, which is claimed to be based on studies of built early medieval Indian temples, especially the



measurements, form-generating principles etc. used therein; also seems to support this position (Ravindran & Hardy, 2020):

*“So, you can work it out, but that doesn’t mean it is prescriptive and that it is like a formula, like you read the text and you turn it into a building. You have to know the tradition and you have to interpret, there are bits it leaves out, which you have to fill in, you also have to improvise because it only gives you the bones.”*

This position allows for the simultaneous resolution of the following common congruences noticed between late Vāstuśāstra texts and contemporaneous built traditions:

1. Higher correspondence between built structures and textual norms
2. Identification of regional variance in prescriptions of texts from specific regions
3. Sub-par metrical Sanskrit with fluidity of definitions, requiring context

### 3.1.3. The First Vāstuśāstra Texts

#### 3.1.3.1. The Delayed ‘Complete’ Vāstuśāstra Text

The texts most representative of the Vāstuśāstra genre are the Mayamata and Mānasāra, which despite the various inconsistencies and errata, are comprehensive texts on design itself; covering various topics allied to architecture in such detail that Acharya posited the Mānasāra to be the Indian equivalent of Vitruvius’ De Architectura (Otter, 2009). Yet, an examination of the contents of the text reveals that prescriptions on many of the topics in the text were already to be found in texts much earlier than the 10<sup>th</sup> century AD (the estimated date of composition of the Mayamata and much later, the Mānasāra) (Hardy, 2009).

The typical subjects dealt with in a mature or ‘complete’ ideal Vāstuśāstra text can be listed as follows (Bhattacharya T. , 2006):

1. Rituals, sacrifices etc.
2. Site selection (site analysis characteristics)
3. Soil testing and selection
4. Site orientation, declination, use of the gnomon etc.
5. Qualities of an architect and his/her team
6. Measurement systems, scales, units, conventions etc.
7. Residential building guidelines and byelaws
8. Royal building (palaces, forts etc.) guidelines and byelaws
9. Religious building (temples etc.) guidelines and byelaws
10. Materials and construction techniques
11. Public infrastructure (tanks, roads etc.) guidelines & byelaws
12. Urban planning and design (cities, towns etc.)
13. Martial planning and design (forts, camps, etc.)
14. Rural planning and settlement design (villages, hamlets etc.)
15. Classification(s) of typology(s) of buildings
16. Proportions and Orders (of detailing/ornamentation) etc.
17. Determining ground plan (padavinyāsa, mandalavidhi etc.)
18. Faults (shalya), and Results, esoteric calculations (āyādi)
19. Iconometry, iconography and sculptural matters
20. Royal paraphernalia (thrones, crowns, insignia etc.)
21. Furniture (couches, bedsteads, swings etc.)

The first subject (Rituals and Sacrifices) has witnessed continuous prescriptions since at least 1000 BCE (the Rig Veda texts), attaining particular importance from the

post-800 BCE Kalpasūtra corpus (Subjects 1-3, also, the corpus also contains the prototype of the manner of prescriptions of the later Vāstu texts) onwards. The early texts Arthaśāstra (300 BCE – 300 CE) and De Architectura (27 BCE-14 CE) prescribe on about 15 subjects (Site Selection to Orders) with relative technical rigour. The next 5 subjects (Padavinyāsa to Furniture) were dealt with in the Brihat Samhita (c. 550 CE) for which multiple other texts were referred, establishing the presence of accessible literary prescriptions regarding the same by 550 CE. Thus, if the first mature texts of the Vāstuśāstra genre are taken to be the extant Samarāṅgaṇa Sūtradhāra, Mayamata etc. (all of which have a post-1000 CE compilation date), the development of the textual tradition over a period of 500 years is not well accounted for. The lack of comprehensive Vāstu-focussed texts up to the Samarāṅgaṇa Sūtradhāra is also not explained by an otherwise vibrant literary tradition of Sanskrit technical literature (śāstra).

### 3.1.3.2. The Missing Link - The Tantras

The research done by Sanderson, Mills, and others, in the domain of Śaiva Saiddhāntika literature, gracefully establishes the missing link through their exegesis of the Pratiṣṭhānta textual tradition. The Śaiva Saiddhāntika Pratiṣṭhāntas, which were developed between 450 CE – 900 CE, primarily and initially in Northern India, could possibly be the precursors of the ‘complete’ Vāstuśāstra text in both contents and chronology (Sanderson, 2012) (Mills, 2019).

This assertion gains strength through an analysis of the rituals and frameworks expounded upon in a Pratiṣṭhānta (Sanderson, 2012) (Mills, 2019):

1. Consecration of sites – vāstuyāga
2. Creation and consecration of:
  - a. Images/idols
  - b. Temples
  - c. Monasteries
  - d. Water tanks
  - e. Palaces
  - f. Settlements
  - g. Cities
  - h. Provinces
3. Prescriptions on iconometry and iconography
4. Prescriptions on ritual implements and royal accoutrements
5. Prescriptions on rituals, sacrifices, consecrations etc.

This comprehensive collection of originally disparate topics was accomplished within a Śaiva Saiddhāntika framework, with examples of Vaiṣṇava compositions of a similar nature (Hayaśīrṣa Pāñcarātra, Marichi Samhita etc.) also being found. Thus, the ‘Tantra’ traditions (represented by the various Tantra, Āgama and Samhita texts), could be seen as the precursors of both the structure and the contents of the later Vāstuśāstra texts.

Further support for these assertions can be obtained from contemporaneous epigraphic, literary and archaeological sources (from across India, and in some cases beyond) which record the following activities of a Śaiva Saiddhāntika ascetic/priest (Sanderson, 2019) (Sanderson, 2009):

1. Consecration and initiation of royalty
2. Conducting of public ceremonies and rituals
3. Conducting of rituals for victory in war
4. Establishment and consecration of:
  - a. Vāstuyāga (sites)
  - b. Monasteries
  - c. Temples
  - d. Brahmadeya (lands granted for settlement to Brahmins)
  - e. Settlements
  - f. Water tanks
  - g. Irrigation facilities

Sanderson also locates these activities within a larger framework of religious paradigm shifts wherein idolatrous Hindu sects (such as (primarily) Śaiva Siddhānta, (as well as) Pāñcarātra Vaiṣṇavism, Śāktism etc.) took over Early Medieval (around 600 CE to 1300 CE) peninsular Indian kingdoms due to the following features with which these newer religious sects were associated (Sanderson, 2009, p. 253):

1. Emergence of numerous new dynasties at various regional levels
2. Development of rural economy and real estate due to proliferation of land-owning temples
3. Rise of new urban centres – both agglomerative commercial centres, and newly established State-founded planned settlements
4. Expansion of agriculture due to land development, population growth and investment in the creation of means of irrigation and water supply
5. Cultural and religious assimilation of diverse social groups

### 3.1.3.3. Characteristics of Pre-1000 CE Vāstu Texts

The Tantra literature of this period participated in a greater paradigm shift towards urbanisation of peninsular India through the prescriptions and descriptions of various components of the built environment – as processed through the theological perspectives of each particular sect. The key characteristics of pre-1000 CE and post 1000-CE Vāstu texts are more evident when contrasted with each other, and supplied with examples; with some of these key characteristics being summarised in the following table.

*Table 3-2: Characteristics and examples of pre-1000 CE and post-1000 CE Vāstu texts*

Examples for post-1000 CE Vāstu texts	Post-1000 CE texts - Characteristics	Pre-1000 CE texts - Characteristics	Examples for pre-1000 CE Vāstu texts
Mānasāra	Composed after 1000 CE	Mostly composed upto 1000 CE	Piṅgalāmata, Pāñcarātra
Aparājitaṭpucchā is associated with NW India (Gujarat)	Associated with geographic regions – mostly secular	Associated with Tantric/religious sects	Mantramārga Śaiva Siddhānta, Pāñcarātra
Jayapucchā gives norms for Rahmanaprasada (mosque)	Would give some attention atleast to non-sect norms	Would ignore or censor non-sect norms	No mention of Śaiva temples in Pāñcarātrāgama norms
Sthapaka Nirānjan Mahapatra's Śilparatnakosha	Written for Śāstric legitimacy by scholars and/or practitioners	Written for theology and rituals by priests/believers	Īśānaśiva's Īśānaśivagurudevapaddhati
Mānasāra's list of mandalas for various uses	May retain religious prescriptions; often without rigorous esoteric frameworks	Contain prescriptions for ritual paraphernalia;	Kāmikāgama (Pūrvapada)'s linga consecration rituals
Bṛhadeeswara Temple – Mayamata	Have higher correspondence with historic examples	Have low correspondence with historic examples	Uttamerur – Marichī Samhitā
Viśvakarmā (divine architect) – many post-1200 texts	Ascribe epistemology-efficacy to mythic characters	Ascribes epistemology-efficacy to the sectarian deity	Śiva is the source of the Kāmikāgama

References: (Dagens, 2007) (Ramaswamy, 2004) (Hardy, Drāvida Temples in the Samarāṅgaṇasūtradhāra, 2009) (Sanderson, 2009) (Sanderson, 2012) (Otter, 2016) (Mills, Temple Design in Six Early Śaiva Scriptures. Critical Edition and Translation of the prāsādalakṣaṇa-portions of the Bṛhatkālottara, Devyāmata, Kiraṇa, Mohacūrottara, Mayasamgraha & Piṅgalāmata, 2019)

Thus, the sectarian, religious, ahistorical and esoteric nature of the pre-1000 CE vāstu texts are contrasted with the relatively secular, civil, historic and accessible nature of the post-1000 CE Vāstuśāstra texts. Of the multitude of texts from the post-1000 CE tradition, the Samarāṅgaṇa Sūtradhāra is posited to be the pioneer of the 'Vāstuśāstra' literary tradition (due to the various features and developments detailed ahead).

### 3.1.3.4. Samarāṅgaṇa Sūtradhāra

#### 3.1.3.4.1. Pioneer of the Genre

The texts prior to the 1000-CE period do not make overt claims to being Vāstuśāstra texts nor do they distinctly define the domain of their study; though, even the Samarāṅgaṇa Sūtradhāra does not overtly refer to itself to be a Vāstuśāstra text (Dagens, 2007), it directly refers to the subject as Vāstuśāstra in the first chapter itself, and continues to define the subject domains (country, town, residence, assembly, court, building and seats) on which it shall prescribe (Sharma S. K., 2008, p. 2).

The Mayamata claims at the conclusion of each chapter in the colophon to be a Vāstuśāstra or a Vāstuśāstra varyingly; while the Mānasāra claims distinctly to be a Vāstuśāstra text (Dagens, 2007). Yet, both the Mayamata and the Mānasāra, follow the compositional structure of a Pratiṣṭhāntara text more than that of a Purāṇa text; unlike the Samarāṅgaṇa Sūtradhāra – which both depends heavily on the Purāṇas (such as the Matsya Purāṇa and the Agni Purāṇa for its prescriptions), as well as styles itself literally on the Purāṇa model (Salvini, 2012). The background for the conception of the Samarāṅgaṇa Sūtradhāra itself qualifies it as possibly the first of its kind for the Vāstuśāstra genre, since it can be considered to be a result of king Bhoja's attempts to collect and refine the Śāstras in all domains through his court scholars (Munshi, 1959, p. 10). The three major epistemological changes that this text adopted and introduced to succeeding traditional Indian Vāstuśāstra literature are:

1. the secularisation of architectural commentary and exposition, relatively independent of religious/sectarian identities and norms
2. the inclusion of civic architecture and settlement planning and related subjects, into the subject matter encompassed by Vāstuśāstra
3. the initiation of the tradition of attribution of authorship to historical persons (in this case, the patron Bhojarāja/Bhojadeva (as opposed to mythical origins))

The text can thus be considered to be building on the previous literary traditions of the Kalpasūtra corpus, the Pratiṣṭhāntara corpus etc. in a unique manner and beginning a new literary tradition.

#### 3.1.3.4.2. Influence of the Pratiṣṭhāntaras

It is established that the king Bhoja was a devotee of Shiva, whose preceding generations were initiated into the Mantramārga sect of Śaivism by the influential contemporary ascetic Bhāva Brhaspati (Ganguly, 1930, p. 223) (Sanderson, 2009). The entire Paramāra clan (to which Bhoja belonged) is considered to have erected many temples to Shiva and were known in literature to strongly favour Śaivism (Brhaspati

(Ganguly, 1930). The Śaiva Atimārga saint Nakuliśa was also a deity honoured in the Paramāra kingdom (Ganguly, 1930, p. 222).

The king is further attributed with the composition of the influential Śaiva Saiddhāntika text known as the Tattvapraśāsa – a text which derived its prescriptions from the seminal early Mantramārga text known as the Lalitasvacchanda or the Svachchanda (Sanderson, 2012). The king is also attributed the authorship of another Mantramārga treatise known as the Siddhāntasārapaddhati, a ‘*paddhati*’ text (a type of Mantramārga literature written by erudite Śaivasiddhāntika priests and abbots as summarised prescriptive texts for the rituals and theology of Śaiva Siddhānta); further implying the close links between the Mantramārga sect of Śaiva Siddhānta and the sectarian preferences of the scholarship at Rāja Bhoja’s court. The text Śivatattvaratnamālīka is also attributed to Bhoja (Ganguly, 1930, p. 250) (or his court), but not many details are known about this text and a guess is hazarded that it could be a primer for the tenets of Śaiva philosophy.

The first lines of the Samarāṅgaṇa Sūtradhāra (when listing the contents it shall prescribe about) mentions a very similar idiosyncratic collection of subjects (country, town, residence, assembly, court, building and seats) that the Pratiṣṭhāntara texts prescribe upon (thrones, jewelry and seats, rituals and ritual implements, houses, monasteries, halls, palaces, settlements etc.). In fact, the opening lines of the Samarāṅgaṇa Sūtradhāra venerate Shiva as ‘*bhuvanatraya sūtradhāra*’ which literally means ‘the architect of three worlds’ (here possibly implying heaven, earth and hell) (Sharma S. K., 2008). These observations make a strong case for the influence of Mantramārga Śaivism (and implicitly, the Śaiva Siddhāntika Pratiṣṭhāntara texts) on Bhojadeva and/or his court scholars, at the time of the composition of the Samarāṅgaṇa Sūtradhāra.



Figure 3-8: Svachchanda Bhairava/Sadashiva, the supreme being of Dakshina Saivism  
Details: Watercolour painting from Himachal Pradesh painted c. 1825–1850 CE  
Source: Walters Art Museum, 2002



Figure 3-9: The Samadhishvara Temple at Chittor fort in Rajasthan, also known as the Bhoja-svamin-jagati, which originally housed the deity Sadashiva  
Source: Daniel Villafruela, 2013



### 3.1.3.4.3. Influence on pan-Indian Authorship

It is established the text was popular throughout India and was quoted and adapted by authors on Vāstuśāstra ranging from Kerala in the mid-eleventh century CE (the Śaiva Saiddhāntika scholar Gurudeva (who wrote the Paddhati text known as Īśānaśivagurudevapaddhati, on Vāstuśāstra and allied Śaiva Siddhānta matters ) quoted from Bhojarāja's Samarāṅgaṇa Sūtradhāra often in his prescriptions (Yano, 1986, p. 21)); to modern-day Rajasthan (the Aparājitaṭṭha and the Jayapṛccha, both texts being localised to Northwestern India) in the post -1150 CE period (Dhaky has demonstrated the adaptation of multiple verses, chapter contents and overall structuring from the Samarāṅgaṇa Sūtradhāra (Dhaky, 1996)).

### 3.1.3.5. Maturation of the literary tradition

The evolution of the currently established literary tradition of Vāstuśāstra as a historical-traditional system of architecture and planning and other allied arts took a long period of time with many significant advancements in ontology, theology and applications; not including the developments in building technology and social complexity over the ages. A comprehensive comparison of the various influential texts referred to in this study across various parameters is provided as a table in the appendix for reference and analyses.

## 3.1.4. Terminology

### 3.1.4.1. Tvastr and Viśvakarmā in the Vedas

The god Tvastr (whose attribute is the axe) is the “First Fashioner” or Carpenter as per the Rig Vedic creation myths (Brown W. N., 1942). In the succeeding texts, the gods Tvastr and Viśvakarmā, and their roles underwent changes through the years, for example, the term ‘tvastr’ distinctly meant a carpenter by the time of the Atharva Veda (AV. xii.3.33; Amarakosa 2.10.9; 3.3.35). The adoration of Viśvakarmā as the divine ‘artificer’ remained consistent through the centuries with stories attributing him with the forging of exceptional weapons for deities, incomparable mansions for heavenly residents etc. The eventual canonization of Viśvakarmā as the divine architect began early in the Common Era, for example in the c. 200 CE Northwestern Vaiṣṇava text Harivaṃśa Purāṇa (where Viśvakarmā is stated to be the preceptor of sculptors “Śilpācārya” whereas the term Śilpin (originally sculptors) implies by context the meaning of architects) (Purushothaman & Harindranath, 2010). Tvastr is now an obscure deity who is worshipped by some sculptors and artisans on the day of his festival, but otherwise, this role as the First Artificer or First Fashioner is now largely attributed to Viśvakarmā (but only within the context of artefacts, dwellings and instruments; with the actual act of

creation and conception now attributed to various different gods such as Brahma, Vishnu, Shakti etc. depending on the sect or tradition).

### 3.1.4.2. Vardhaka, Vardhaki and Vaddhaki

The terms referring to architects underwent continuous changes as well. No specific term is identified for an architect in the Vedic texts but carpenters (known as ‘vardhaka’) are known to be the primary builders of dwellings and other structures in the Vedic ages (Ray A. , 1957). This term sees consistent longevity upto at least the Buddha's times, where the term ‘vaddhaki’ sees consistent use for implying a carpenter, builder or architect (Fausboll, 1896). In fact, the Maha-Ummaga Jataka and the Milinda Panha (both dated to between 200 BCE and 200 CE) refer to a city planner-builder as the ‘maha-vaddhaki’ (literally chief-carpenter) (Fausboll, 1896). The Jataka also refers to a stonemason as an itthaka-vaddhaki (literally brick-carpenter) (Fausboll, 1896). These terms could simultaneously imply the prevalence of wooden architecture in those times as well as the simultaneous roles played by the carpenter-mason as planner, designer and builder (Ray A. , 1957).

### 3.1.4.3. Takshaka

The Ramayana could be the oldest extant text (not considering its later interpolations after 200 BCE) that refers to both the terms ‘vardhaka’ or ‘vardhaki’ and ‘takshaka’ as a carpenter (Benfey, 1866). The Pali texts of Buddhists (Scharfe, 2002) also refer to the city of Takkaṣa for which the etymology is given to be the ‘City of Cut Stone’ which communicates the usage of the term ‘takshaka’ as possibly a stonemason or sculptor as well. Later usages of the term ‘takshaka’ conflates it among multiple meanings (Bhaṭṭācārya, 1900), including:

1. A carpenter
2. The Sutradhara, the manager and chief actor in the prelude of a drama
3. One of the principal Nagas or serpents of Patala
4. The divine artist, Viswakarma
5. The name of a tree
6. ‘takṣ’ to chip, to peel or plane

Importantly, this conflation could communicate the merging of the domains of carpentry, masonry, architecture and planning in the post-200 CE literature of India.

### 3.1.4.4. Sūtradhāra

The term ‘Sūtradhāra’ literally means ‘thread-holder’ and is usually found in the context of dramas and plays to refer to the narrator but it has also been found in multiple contexts in Indian history, including the following (Apte V. S., 1890) (Sircar, 1960):

1. mason
2. artisan
3. carpenter
4. epithet for the engravers of stone inscriptions of the medieval period
5. stage-manager
6. stage-maker
7. principal actor
8. author of a set of aphorisms
9. epithet for gods, eg.: Indra, Shiva etc.

The imminent rise of this term to indicate the role of an architect is noticed in the post 450 CE period, as indicated by the use of the term 'sūtra-pāta' to indicate draftmanship in the Pauśkara Samhita (Apte P. P., 1991), whereas the architect is referred to as Śilpin. The rise in the number of references to the 'Sūtradhāra' in both literature and inscriptions across India is found in the post-500 CE period and is a phenomenon that spread throughout India including parts of Karnataka but surprisingly did not influence Tamil Nadu and Kerala as much. In these two states, the term 'Sūtradhāra' has not been known to occur in an architectural or artistic context in both literature and inscription for the early historic to the late medieval period. The terms 'sthapati' and 'perum-tacchan' finds much more currency in contemporary South Indian building traditions (Ramaswamy, 2004), and refers in particular to the sculptor of idols, icons and the temple-building craftsmen in particular (Parker, 2003). In contrast, the two major post-1000 CE Vastusastra texts of North and Northwestern India – the Samarāṅgaṇa Sūtradhāra and the Rājavallabhamaṇḍana (respectively) refer to architects distinctly and frequently as 'Sūtradhāra', with the latter eponymous text being attributed to a historical practitioner Sūtradhāra Maṇḍana.

#### 3.1.4.5. Names, Castes and Social Privileges in Early Medieval South India

The craftsmen engaged in architecture and the allied arts primarily belonged to five castes who termed themselves variously as 'Vishwakarma' castes, 'Vishwakarma Kulaja' (which literally means 'Progeny of Vishwakarma'), 'Rathakarar' (possibly in reference to the chariot-makers classes of the Rig Veda), Kammalar (Tamil Nadu), Panchalar (Karnataka), Panchanamuvuru (Andhra Pradesh) etc.; but were actually composed of upto six distinct occupational classes - goldsmiths (tattan), brass smiths (kannan), blacksmiths (karuman or kollan), carpenters (tachchan) and masons (silpi or kal-tachchan) (Ramaswamy, 2004). The term 'Perum Tachchan' which literally means

'Master Carpenter', or the term 'Perum Kollan' which literally means 'Master Craftsmen', is the closest terms that these inscriptional records allow for the term 'architect' in the records of the Early Medieval period in Tamil Nadu (Ramaswamy, 2004).

Sculptors, engravers and other related craftsmen working in peninsular India in the Early Medieval period often adopted Sanskritised surnames such as 'Achari', 'Acharya', 'Asari', 'Bhatta', 'Bhattar' and 'Oja' (Ramaswamy, 2004, p. 559ff). Ramaswamy also makes the case for these surnames as being negotiations for power and status in Early Medieval society due to their being associated primarily with the upper castes, especially the Brahmins. The right to learn writing, wear the sacred thread, inscribe on temple walls etc. were understood to be powerful challenges to the established social order, since even contemporary royalty were not expected to have these privileges which the craftsmen acquired without undue mediation due to the requirements of their vocations (Ramaswamy, 2004). Thus, in an age of general illiteracy, these craftsmen (who belonged to the lower classes of their times) possessed both the knowledge of literacy and the agency to use this knowledge meaningfully on reputed public media such as the walls of temples (Ramaswamy, 2004, p. 561). These advances were challenged and a resolution was attempted by the contemporary social superiors, the evidence for which is found in the twelfth century inscriptions at Tiruvavur (Tanjavur district) and Uyya kondan Tirumalai (Tiruchchirapalli district), wherein the social privileges and hierarchical position to be accorded to these craftsmen were codified on the basis of the prescriptions of the Dharmasastras and various Smritis (Ramaswamy, 2004).

Ramaswamy's collection of the categories of craftsmen mentioned in Early Medieval temple inscriptions in South India can be compared with their Early Historic equivalents as found in the pre-500 CE texts as well as the terms used by the post-1000 CE texts of Mānasāra and Mayamata to enable an understanding of the change in the terms and roles over the period of about a thousand years.

**Table 3-3: List of roles and the terms used for them in inscriptions on medieval period temples in South India**

*Source: Ramaswamy, 2004*

Role	Post 500 CE South India
Stone cutter	Kal kuttigar
Stone marker / stone measurer	Sutrgrahi
Stone dresser	Vartaki
Mason	Kal tachchan
Sculptor	Silpi
Architect	Sthapati Asari Acharya
Repair craftsmen	Tiruppani cheyvar
Craft overseer	Kankai
Blacksmith	Kollan
Master-blacksmith	Perum-kollan
Goldsmith	Tattan
Master goldsmith	Perum-tattan
Jewel stitcher	Ratna-tayyan
Carpenter	Tachchan
Master carpenter (architect?)	Perum-tachchan

The poor phonetic consistency of the transferred terms as well as the frequent conflation of terms for distinct roles (such as vartaki (vardhaki) for stone-dresser, and sutragrahi (the architect's apprentice in the South Indian Vāstuśāstra texts) to refer to stone marker/stone measurer) may be indicative of the loss of distinction between these roles in post-1000 CE era architectural projects, but this premise is not supported by the historic evidence of rise in both the quantity and quality of temple building in Tamil Nadu and the neighbouring states in contemporaneous periods. Another possibility is that the Sanskrit terms were adapted by local artisans (empowered recently by literacy and wealth) who were desirous of śāstric validation which these sanskritised terms may have provided in part. A compelling occurrence here is the absence of the term 'Sūtradhāra', which is found in inscriptions all over India, including the neighbouring state of Karnataka, well into the post-medieval eras; but which are surprisingly missing in the inscriptions in Tamil Nadu and Kerala. One possible reason could be the dominant influence of the Śaiva Saiddhāntika frameworks for architecture, which also do not contain the terms 'Sūtradhāra' and 'Vardhaka' prominently but instead make many references to the terms 'sthapati' (here meaning architect) and 'silpacharya' (here

meaning teacher/preceptor for architecture and art) – both of which are found in usage in Tamil Nadu and Kerala but find limited use elsewhere.

### 3.1.4.6. Mānasāra and Mayamata

The contemporaneous South Indian texts Mayamata and Manasara use much different terms to refer to the same set of roles (Dagens, 2007, p. 10) (Acharya P. K., 1922):

1. Sthapati – architect
2. Sutragrahin – draftsman / son of architect / disciple
3. Vardhaki – painter / designer
4. Takshaka – joiner / mason / carpenter

These terms are uniquely used by these texts alone and do not find support in both inscriptional and literary precedents. The popular term 'Sūtradhāra' which has both inscriptional and literary support for being understood as architect (and mason and craftsman) is not referred to in these texts which are about architecture essentially. This indiscriminate use of terms and their incongruency with available inscriptional evidence has been referred to by Acharya in his analysis of the names, roles and evidences for the four members of an architect's team in the Mānasāra (Acharya P. K., 1922). These names could also be indicative of the late period of composition of these texts since they display the same conflations and confusions w.r.t. terms as the post-1000 CE inscriptions on temple walls in medieval South India.

### 3.1.4.7. Comparative Analysis

The terms Sthapati, Sutradhara, Sutragrahin, Vaddhaki/Vardhaka, Takshaka/Tachchan, Sthapaka, Silpin/Silpacharya are closely related both phonetically and etymologically; yet they refer to different roles in different contexts in India. A superficial review of these terms and their implied meanings (as tabulated below) reveals that conflations and confusions abounded by the Early Medieval eras as to what each term meant.

**Table 3-4: Comparison of names and roles of building professionals as observed in inscriptions, Vāstuśāstra literature etc.**

Role	Early Medieval South India	Manasara	Mayamata	Preceding traditions, texts and inscriptions
Architect	Sthapati Asari Achari Acharya Perum Tachchan	Sthapati	Sthapati	Sutradhara Maha-vaddhaki Vaddhaki Silpin
Diviner/ Priest	-	Sthapaka	Sthapaka	Sthapaka Vastuvidyacharya Vatthuvijjachariya Vastuka Daivajna
Teacher / Preceptor	Asari	Acharya	-	Shilpacharya
Apprentice/ Draftsman	-	Sutragrahin	Sutragrahin	-
Carpenter	Tachchan Asari	Takshaka	Takshaka	Vardhaka/vardhaki Vaddhaki Takshaka
Mason	Kal-tachchan	-	Takshaka	Itthaka-vaddhaki
Painter	-	Vardhaki	-	-
Joiner	-	Takshaka	Vardhaki	-
Stone marker / stone measurer	Sutgrahi			
Stone dresser	Vartaki			

The conflation of the distinct tasks and names of a carpenter, a stone dresser and a painter under one name – vardhaki, could imply that the compilers of the text as well as the composers of inscriptions were not particularly attentive to the rigour of these definitions. These lesser reports of conflation of terms for the inscriptions in Tamil could indicate the comparative familiarity of the Early Medieval craftsmen with the Tamil language as compared to the recently introduced Sanskrit terms. These premises could also indicate the post-1000 CE compilation of the mature Vāstuśāstra texts by literate craftsmen in Early Medieval South India.

### 3.1.5. Historicity of Indian literature

The descriptions of cities in classical texts and religious literature seem to denote highly developed civilisations, in terms of material and social development (Dutt B. B., 1925) (Ayyar, 1913). Authors have highlighted the mentions made of planned cities, planned layouts and roads, and urban amenities (such as tanks, rest houses, monasteries, council halls etc.) (Ayyar, 1913) (Ghosh A. , The City in Early Historical India, 1973) (Dutt B. B., 1925). We find detailed byelaws and urban design guidelines in contemporaneous architectural treatises for the construction of the aforesaid amenities (Shastri & Gadre, 1990) (Vyas, 2001) (Ray A. , Villages, Towns and Secular Buildings in Ancient India, 1964). Yet, many authors such as Sir Wheeler (Wheeler, Civilizations of the Indus Valley and Beyond, 1966), Ghosh (Ghosh A. , The City in Early Historical India, 1973) bemoan the lack of adequate material evidence obtained to support the textual descriptions provided by some authors (such as Dutt (Dutt B. B., 1925), Ayyar (Ayyar, 1913) ) as evidence for early Indian urban history. The significantly lesser number of fortified settlements excavated thus far, those too of a much lesser scale and magnificence than attributed to them by literature, is a contradiction that needs to be bridged by further archaeological evidence (Smith M. L., 2016) (Singh U. , 2008) (Ghosh A. , The City in Early Historical India, 1973).

The texts themselves are not spontaneous compilations but the results of accretion of knowledge over the centuries, with many of the influential texts undergoing constant refinement, thus making the task of dating them to a specific period highly debated (Acharya P. K., 1933). Acharya contented for dating the Manasara as one of the earliest texts on architecture and town planning, around the age of Vitruvius' texts on architecture – around 27 BCE; a date which is contested by other scholars such as Bhattacharya as being too early (Acharya P. K., 1933, p. lix) (Bhattacharya T. , 2006, p. 192). This uncertainty extends to other seminal texts as well such as the Brihat Samhita (estimated to 550 AD) and the Mayamatam (estimated to the end of the 10<sup>th</sup> century AD) (Hardy, Drāvida Temples in the Samarānganasūtradhāra, 2009) as well. Erdosy highlights the fact that of all the written works mentioning cities, none of them can be reliably dated to before the Maurya period (Erdosy G. , 1988, p. 84); which is presented as grounds for scepticism as to their authenticity about pre-Mauryan-era cities.

Even sites such as Ahichchatra, Hastinapur etc. which are associated strongly with the religious and mythological-historical legends of the region, have not yielded material findings that can adequately reflect the level of sophistication that the texts ascribe to them (Singh U. , 2008) (Ghosh A. , The City in Early Historical India, 1973). This



phenomenon is explained by Ray as arising from the dominant beliefs of the period, i.e. only the immortal gods needed permanent habitations (of fired bricks or stone) whereas mortal men did not require structures that would outlive them (Ray A. , Villages, Towns and Secular Buildings in Ancient India, 1964, p. 7). The materials preferred instead by all classes of society, from kings to commoners, is taken to be mud bricks, wood, mud and straw, bamboo, reeds etc. by Ray; and thus is proposed as the cause for the lack of retrievable archaeological material evidence for Early Historic urban centres (Ray A. , Villages, Towns and Secular Buildings in Ancient India, 1964, p. 6). This opinion is refuted by Erdosy who claims that extensive wood work is traceable in excavations, at least in the form of post holes; whereas the areas excavated presented only basic mud brick houses along with household implements made of copper and/or bone (only weapons were made of iron) (Erdosy G. , 1985, p. 95).

In the case of the built traditions of the Vedic era; apart from the difficulties in its preservation due to its antiquity, it could be that the Vedic corpus was not popular literature and, therefore, does not necessarily represent popular ideas or practices (Singh U. , 2008). Ghosh communicated his understanding of the Early Historic cities as understood via the descriptions in literature through the following statement (Ghosh A. , The City in Early Historical India, 1973, p. 49):

*“Literature fails to give a realistic picture of any city.”*

Deloche identifies, in his work on fortifications in historic India, certain built features as having been developed and in use for almost a thousand years continuously upto 300 CE (Deloche, 2007). Some of the characteristics that Deloche considers as being the characteristic developments of pre-300 CE Indian fortifications are (Deloche, 2007):

*“... until the 3rd century A.D., strongholds in the Indian subcontinent were usually built according to a geometrical plan (quadrilateral, trapezium, rectangle, square, circle or semicircle); ... a high and thick earthen embankment, with stone facing, ... a wide and deep ditch ... [massive] curtain walls ... solid quadrangular towers; gateways were relatively simple: [either projecting inside or outside]... walls were crenellated ...”*

Ghosh provides a very similar list of built features as being common to all cities described in Indian literature (Ghosh A. , The City in Early Historical India, 1973, pp. 49-50):

1. High defensive walls
2. Deep ditches
3. Wide streets

4. Large portals
5. Sky-touching mansions with banners
6. Busy and prosperous markets
7. Flowering trees
8. Parks
9. Waters with lotuses and geese
10. Well-dressed persons
11. Music in the houses

Ghosh characterises these literary descriptions as being “repetitive and conventional to the extreme”. The descriptions in contemporaneous literature about Early Historic Indian cities are usually in eloquent, rich and soaring language; sometimes straying into what Erdosy considered ‘stereotyped’ and ‘uninformative’ descriptions that serve more as literary tropes than useful markers for archaeological distinction (Erdosy G. , 1988, p. 84). This viewpoint has been repeated even in recent research, such as Otter, whose claim is that Vāstuvidyā texts have a poor reputation in architectural-historical circles due to the perspective that traditional vāstuśāstras and śilpaśāstras are simply irrelevant for understanding preserved structures (Otter, 2016). Thus, the possibility of using these texts as a historical resource and attempting to establish correspondence of the textual norms with their historic built counterparts may not be a fruitful exercise, unless validated by sources beyond literature itself.

### 3.1.6. Iconography and its Applications

#### 3.1.6.1. Aṣṭamaṅgala Traditions and Vāstuśāstra

*Table 3-5: Comparison of lists of Aṣṭamaṅgala objects in the Jaina, Buddhist, Pāñcarātra and Vāstuśāstra traditions  
(continues horizontally on the next page)*

Acalā Āyāgapāṭa	Siṃhāṇḍikā Āyāgapāṭa	Digambara Jaina Tradition	Śvetāmbara Jaina Tradition	Pre-200 CE Gandharan Buddhapada	Theravada Buddhist Aṣṭamaṅgala
Svastika			Svastika	Svastika	Svastika
Srivatsa	Srivatsa		Srivatsa		Srivatsa
Nandyavarta			Nandyavarta		
Ratna-roshi	Vardhamanaka	Bhrngara	Vardhamanaka		
Sthapana	Sthapana/ Bhadrāsana		Bhadrāsana		Bhadrāpitha
Purnaghata/ Kumbha	Mangala- kalasa	Kalasa	Kalasa		Purnaghata
		Darpana	Darpana		
Matsya- yugma	Mina-yugma		Mina-yugala		Matsya-yugala
Tri-ratna	Tri-ratna			Tri-ratna	
Padma	Padma			Padma	
		Camara		Camara	Camara
					Sankha
		Supratistha			
		Dhvaja			
		Chatra			
Icons or names without parallels or similarities across traditions					
		Vyajana			

Pauskara Samhita - Mandalas	Manasara Astamanaga la for crowns	Manasara – Names of Villages	Mayamata Astamanagala for deposits	Mayamata – Names of Types of Villages	Mayamata – Names of Types of Houses
Svastika	Svastika	Svastika	Svastika	Svastika	Svastika
	Śrivatsa		Śrivatsa	Srivatsa	
		Nandyavarta		Nandyavarta	Nandyavarta
					Vardhamana
	Pūrṇakumbha		Pūrṇakumbha		
	Mirror (Darpana)		Mirror (Darpana)		
		Padmaka		Padma	Padmasana
	Camara		Camara	Prakirnaka	
	Śaṅkha	Prastara	Śaṅkha	Prastara	
Supratīṣṭha				Sripriṭishthita	Sripriṭishthita
	Chatra				
Sarvatobhadra / Bhadraka		Sarvatobhadra			Sarvatobhadra
Icons or names without parallels or similarities across traditions					
		Dandaka		Dandaka	
		Caturmukha			Caturmukha
22 other types of Vastumanadal as	Dīpa		Dīpa		
		Karmukha	Vrishabha	Paraga	Nalinaka
					Pralinaka
					Rucaka

### 3.1.6.2. Comparative Analysis

1. 4 out of 8 Aṣṭamaṅgala in the lists of the Manasara and the Mayamata are The consistent similarity of around half of all the classifications of villages, towns and even crown adornments in the Manasara and the Mayamata, to that of the iconographic lists of pre-500 CE Jaina and Buddhist traditions; could be explained by:-
  - a. their composition in a milieu (300 CE to 1400 CE) where both Buddhism and Jainism were socially accepted to the degree that their esoteric iconographic elements were accessible to the composers of the Vastusastra texts
  - b. The possibility of the South Indian vastusastra texts being composed in a Śaiva Saiddhāntika framework along the lines of the familiar Pratiṣṭhāntara texts, especially at the Southern Golaki-matha at Tiruvarur (an erstwhile Jaina centre of importance) – allows for the adaptation of Jainaa and Buddhist iconographic elements into the taxonomy and contents of the typology of settlement templates during the recension and compilation of the texts
2. This also serves to bring to focus the texts' possible dependency on contemporary iconographic elements, for the classification of types of settlements; instead of other more familiar and accessible typologies for categorising the prescribed templates for settlements, such as :-
  - a. literary precedents such as the Arthasastra (whose methods provide exclusive definitions of areas and settlements based on demographics, economy, landholding patterns etc. which is conducive to taxation and administration)
  - b. Praxis-based precedents, such as the Early Medieval South Indian sabhas, urs, nagarams, nadus, valanadus, mandalams etc. (which were flexibly hierarchical collectives of contemporaneous adult society members/households of distinct areas and settlements – this typology is also conducive to taxation and administration.
3. Specific components of the prescribed templates, such as the central temple, the concentric chariot streets, the cardinal street layouts etc. were developed since the founding (in some cases being founded before 100 BCE) of the South Indian temple towns over a period of centuries and attained a peak of maturity around the South Indian Early Medieval period (about 500 CE onwards, i.e., before the

estimated time of composition of the South Indian Vāstuśāstra texts); thus, the combination of descriptive observations of contemporary temple towns with iconography-based prescriptions in the norms of the texts is an open possibility

4. The feasibility of construction and the post-implementation utility of the distinctly iconography-based plans for settlements (such as the padmaka or the svastika) is doubtful; this position being reinforced by the absence of built examples of any such plans in historic India

Thus, the actual historic application of the settlement templates or 'village plans' as described in the Vastusastra texts (of the post-1000 CE traditions) can be considered as being not adequately supported.

## 3.2. Discussion

### 3.2.1. Issues in Research on Vāstuśāstra

Otter identifies the following common issues in currently published researched research on Vāstuśāstra (Otter, 2016, pp. 22-23):

1. Lack of established scholarship in the domain
  - 1.1. Inadequate philological research in Indian architectural historical research
  - 1.2. Poor reputation of Vastuvidya texts in architectural-historical circles due to the perspective that traditional vāstuśāstras and śilpāśāstras are simply irrelevant for understanding preserved structures
  - 1.3. Indian architectural-historical research remains almost exclusively limited to sacred architecture; and profane or residential architecture (the original and actual application area of Vāstuvidyā) is not dealt with as often usually
2. Inability to establish valid links between the texts and the practice
  - 2.1. Dominant scholarship assumes a priori a contemporaneous relationship between theory and practice, without adequate demonstration of the same
  - 2.2. Chronologically inconsistent links between texts and buildings are often asserted
  - 2.3. Archaeological findings which contradict textual norms are not dealt with often

#### 3.2.1.1. Historicity and Ideology in Vāstuśāstra Research

Otter argues for a link between the ideological positions of “Revivalist” authors who intend to revive the genre of literature as well as the manner of building prescribed therein, with the lack of technical specialty of these authors that could enable them to consider a specific domain-based and empirically verifiable research methodology, such as philology (Otter, 2016, p. 22)

*“It is often assumed that the traditional vāstuśāstras and śilpāśāstras are simply irrelevant for an understanding of the structures that have been preserved. The research on these texts is therefore largely left to authors who apparently are not primarily involved in philological research, but are interested in the resuscitation of Vāstuvidyā.”*

This claim finds support when some of the claims of the foremost scholar on Vāstuśāstra in post-1900 CE India is analysed with respect to historicism, an example of which is furnished below (Acharya P. K., 1946, pp. 414-415):

*“The layout of existing villages and towns, and the orientation and the arrangement of dwelling-houses therein, would supply ample proof to hold the view that there was a deliberate policy of the Muslim invaders and conquerors of India to impose their own methods and principles of architecture in India. Thus, in the layout of villages and towns and in the orientation of still existing houses, the scientific principles of Hindu architecture, though more suitable for the soil and climate, are missing.”*

The claim is untenable on many fronts, such as:

1. an ahistorical and generalised representation of the Indian subcontinent under Islamic rulers
2. the use of an ahistorical claim to explain away contradictions and outliers w.r.t. building norms at all scales: from discrete dwellings to towns
3. the logically fallacious position (*ipse dixit*) held for the validation of compliance with śāstric norms in the past - ancient settlements were planned according to Vāstuśāstra’s prescriptions, but material proof of these settlement plans cannot be accessed due to deliberate Islamic policies which imposed foreign architectural and planning principles; this position does not answer how the first statement is validated (apart from via dogmatic assertion)

This ahistorical rationalisation is considered to be a feature of ideology-based societies by Lefort, as opposed to being a consequence or coincidence of the passage of time (Lefort, 1991):

*“Ideology is the sequence of representations which have the function of re-establishing the dimension of a society ‘without history’ at the very heart of historical society.”*

This nationalist bias in the interpretation of the texts, its norms and their perceived compliance is observed by Jaskunas to be an attempt at nation-building through selective and ideological interpretations of Śāstric literature (Jaskunas, 2004). The connection between nationalist biases and the tendency to extend the antiquity of the domain of Vastusastra is observed by many authors (Bafna, 2000) (Desai, 2012) (Parker, 2003) (Otter, 2016). In fact, the interpretation and presentation of the Mānasāra as the Early Historic Indian equivalent of the c. 25BCE ‘De architectura’ books by the Roman engineer-architect Vitruvius is one of the topics of investigation of Otter’s research on Vāstuśāstra (Otter, 2009). The ubiquity of nationalist-ahistorical literature in the domain of popular Vāstuśāstra literature has been reviewed by Otter extensively (Otter, 2016), and the tendency to assimilate ontological concepts from similar traditions such as Feng Shui, New Age beliefs etc. has also been examined. The meta-critical issues of asserting dogmatically on subject matters requiring philological, archaeological and other analyses solely from the evidence of ahistorical religious canonical literature is commented upon by architectural historians (Desai, 2012), architectural educationists (Srivathsan, 1995) as well as practicing architects (Ravindran & Hardy, 2020). On one hand, the unqualified use of literary research to assert developments in Indian architectural history is questioned (Ravindran & Hardy, 2020), but , the perils of educating both past and future architects through obsolete pedagogical frameworks that were originally designed to help colonial



architects obtain technically dependable and aesthetically informed draftspersons who could also supervise onsite works (Chakrabarti, 1999) can be some of the issues that prevent meaningful critical analyses of the Vāstuśāstra traditions from an insider's or practitioner's perspective.

### 3.2.1.2. Epistemological Review

A general overview of the positions held by scholars on the epistemological nature of Vāstuśāstra is discussed below.

*Table 3-6: Overview of epistemological positions on Vāstuśāstra, dominant methods of validation, and ideological tendencies*

Epistemological Position	Posited Objectives	Dominant Method of Validation	Ideological Tendency
<b>Prescriptive Science</b>	Normative manual Byelaws Technical prescriptions	Interpreted correspondences of historical examples with textual norms	Nationalist bias; Revivalist goals; Indian scholarship
<b>Descriptive theory</b>	Text legitimisation, Śāstric codification of praxis	Poor overlap of textual norms with historical examples	Orientalist bias; Analytical goals; Non-Indian scholarship
<b>Theory of architecture</b>	Ontological frameworks for spatial thinking	Interpretative review of historic examples	Integrative goals; mostly Indian scholarship

Note: The table above provides a broad overview of epistemological positions as understood from a review of literature; and may not objectively or consistently represent all possible positions and their nuances.

Source: (Otter, 2016) (Bafna, 2000) (Ghosh A. , *The City in Early Historical India*, 1973) (Maxwell, 1989)

The 'Prescriptive Science' position can be described as considering Vāstuśāstra as an objective, empirical science of architecture and planning; the roots of which can be found in the Indian scriptures, and the practice of which can be ascribed High Antiquity. Dutt is a much-referred post 1900-CE author for this position (Dutt B. B., 1925, p. 310):

*"At every stage of town-planning the master-builder's duties as laid down in the Silpa Sastras bring home to us the validity of this dictum [of the validity and purity of the Hindu race]."*

The 'Descriptive Theory' position would consider Vāstuśāstra to be textual legitimization of contemporary praxis through descriptions as understood from scriptural exegesis. An example of this position is the viewpoint offered by Maxwell (Maxwell, 1989, p. 15):

*"If we rely exclusively upon surviving shilpashastric texts to interpret Indian art, we shall never understand it, since these texts are manifestly those of a small group composed not of artists but of their social superiors, the priestly guardians of cultural tradition."*

*As a literary category, shilpashastra is a conventional, poetically unremarkable, legitimising instrument mediating positively between sanskritic Veda-based tradition and artistic practice."*

The 'Theory of Architecture' position would consider Vāstuśāstra to be composed of frameworks for spatial thinking derived from contemporary praxis, and supported by scriptural exegesis; being capable of adequately informing and explaining coterminous planning and building praxis. Tillotson and Sachdev (Chakrabarti) are contemporary examples of this position on the Vāstuśāstra (Tillotson, 1998, p. xvii):

*"Rather, Vastu Vidya is a theory of architecture. In calling it that I mean that its relation to architecture is comparable to that of grammar to language: it is quite literally inconceivable to have one without the other."*

### 3.2.1.3. Correspondence of Practice and Theory

Rowell finds this to be the weakest link in the study of the Vāstuśāstra genre, with the lack of corerpondences between practice and theory asking questions about the validity of theory itself (Rowell, 1993). The study, research and practice of the same is currently positioned as a dichotomy where knowledge is considered high and practice is considered low (Jaskunas, 2004). This is the case even for the pathbreaking Indian scholars like Raz and Acharya who found that they could not find commentaries or meta-commentaries for the classical treatises (akin to other classical sub-genres) which illustrates the perceived low standing of this domain among traditional Indian scholars through the ages (Acharya P. K., 1946); despite the decipherment of the primary texts themselves requiring separate but involved endeavours by both scholarly trained researchers and lineage-bearing craftsmen and artisans (Raz, 1834). Both Parker (Parker, 2003) and Chakrabarti (Chakrabarti, 1999) agree that the craftsmen of today do not require the esoteric knowledge of Vastusastra as written in the books to execute their projects satisfactorily. Hardy has asserted that comparing and analysing the built structures themselves provides more details about the practitioners' interpretations of the taxonomies and theology that we find in the texts (Hardy, 2001). Yet, the possibility exists that the theory was regularly updated and underwent much refinement before it began to keep up with contemporary local practices – as was illustrated in the case of the refinement of the prescriptions of the Mayamata regarding the maximum height of gopurams at temples due to the heights achieved by the landmark engineering at the contemporaneous Thanjavur Brihadishvara temple (Srivathsan, 1995). These disjoints and links between theory, beliefs and praxis have been explored ethnographically by Parker, who especially engages with the sculptors and sthapatis of contemporary Tamil Nadu, and establishes the differences in epistemology (Parker, 2003, p. 9):

*“In everyday speech śāstra is typically used by Tamil architects and sculptors, not in reference to books, but to bodies of knowledge ...*

*The pragmatic observation to be emphasized in this regard is that many architects and sculptors are honored in their profession as masters of śāstra without their ever having read a single written version of any śāstra.”*

The treatises initially provided indications which supplemented the sthaphathi's knowledge and allowed him to explore new inspirations and ideas, while always remaining within the context of accepted building traditions (Dallaporta & Marcato, 2010). The rigorous adoption and practice of the norms as detailed in the technical treatises were always tempered with clauses allowing for the “sense of the architect” to make the right contextual decisions as merited by the site and its context, regardless of the textual rules (Dallaporta & Marcato, 2010). Yet, some norms became standards which were seen as benchmarks for corroboration of the design process itself, with the ritualised standards for building traditions; leading to technical decisions being slowly fossilised into ritual-symbolic tropes (Dallaporta & Marcato, 2010, p. 47). The final position taken by this research on the question of practice and theory as regards to Vāstuśāstra is represented by Ryle's epistemological position on practice and theory (Ryle, 1949):

*“Efficient practice precedes the theory of it; methodologies presuppose the application of the methods, of the critical investigation of which they are the products.”*

The research considers that the tradition of Vāstuśāstra in early historic India was the interconnected development of building practices that achieved Hindu canonical validation through contemporaneous concomitant regional sectarian literature.

## 3.2.2. Causation in Vāstuśāstra

### 3.2.2.1. Changes in Prime Cause

The primary cause for the beneficent and maleficent results of spatial decisions as per the literary tradition of Vāstuśāstra changes throughout its history. A broad review of the primary causes ascribed to in estimated distinct periods is given below.

*Table 3-7: Primary cause of the effects experienced due to Vāstu norms as per texts*

Period of integration into the Vastu corpus	Cause	Source (found in Indian literature in)	Similar parallels found in	Estimated period of composition of parallel texts
After 1000 BCE; mostly by 200 BCE	1. Divination of portents/omens; 2. Prescriptive omen-effect statements from unknown non-Vedic sources; 3. Astrology	Kalpasūtras (less than 10 texts of total corpus – especially in Grihyasūtras)	Šumma Alu tablet series	At least by 700 BCE; compiled by 200 CE
500 BCE – 500 CE	1. Underground faults (not <i>shalya</i> ); 2. visual examination of site by diviner	Early Buddhist canon (Jatakas, Suttas etc.), Sumangalavilasini etc.	Mesopotamian and Egyptian practices	After 3000 BCE – mostly by 1000 BCE
300 CE –500 CE	1. Improper shape of site, 2. inadequate worship of Vastupurusa	Paushkara Samhita	-	-
500 CE onwards	1. Damage to Vastupurusa at <i>marmas</i> or <i>siras</i> ; 2. effect of Shalyas ; 3. Omens 4. Norms 5. Astrology	Brihat Samhita, Matsya Purana etc.	Ayurveda texts – eg.: Sushruta Samhita (Shalya, Marma, Siras)	600BCE onwards upto 600 CE
500 CE – 1000 CE	Shalyas; Damage to Vastupurusa's marmas; Ayadi formulae; other prescriptions	Hayasirsa Pancaratra, Pingalamata etc.	-	-
Post 1000 CE	Rules and norms as given in the Vastusastra texts	Mayamata, Manasara, Samarangana Sutradhara	-	-
Post 1900 CE	Varied diverse prescriptions including colours, crystals, magnets etc.	Popular handbooks on Vastu issues and their remedies	Fengshui handbooks, New Age astrology handbooks	Post 1800 CE

### 3.2.2.2. Divination and Beyond

The review on causation demonstrates the changing focus of the prime cause as per Vāstuśāstra over the ages. The initial divinatory aspect of Vāstuvidyā, viz. the selection of a fortuitous site for a patron based on intuitive non-rule-based non-astrological divination (maybe even based on visual examination of the site surface only) is not the central technique anymore. The roles of a diviner, an astrologer and an architect-carpenter - which were distinct in the age of the Arthaśāstra, are unclear today. The newer techniques and requirements introduced into Vāstuśāstra has allowed the practice to transcend site selection and expand into architecture, interior design, city planning etc. over the ages. The tradition of Vāstuśāstra (as it is popularly understood) attained its mature form in the post-1000 CE period during which the most popular historic treatises on secular civic architecture by scholars and/or practitioners began to be authored. This is also the period when settlement planning and design were formally incorporated into the design paradigms of Vāstuśāstra. The causation of beneficent and maleficent effects arising in a city and to a city continued to be attributed to a similar category of prescriptions as those for dwellings which included: shape of the site, type of soil, compliance with prescriptions on zoning, compliance with templates prescribed for settlement planning, ayadi formulae for patrons etc. These too are later developments (mostly after 500 CE) and do not reflect the divinatory roots of Vāstuvidyā adequately.

### 3.2.3. Ontological Frameworks in Vāstuśāstra

#### 3.2.3.1. Historical Origins of Ontological Components

A sustained examination of the various ontological concepts and paradigms found in Vāstuśāstra texts (as listed below) has established that almost all of them originated in texts/traditions that had prescriptions which were only superficially related to architecture and planning (with some frameworks being overtly based on divination, geomancy or rituals). These were often adopted into the vāstu corpus on the basis of the canonical authority of the previous text within which they were found, though not necessarily due to the strength of their technical argument or through practical feedback (since the norms are often validated by attempting to identify their origins in the older Hindu scriptures (such as the Vedas), as opposed to the qualified and analysed professional experiences of historic architects or builders). This form of epistemological validation is seen to influence the subjects and the (epistemological and ontological) approach followed by vāstu texts authored into the Late Medieval period as well as in recent history.

*Table 3-8: Ontological frameworks of Vāstuśāstra; as compared to earliest extant literature with the specific paradigm prescribed*

Framework	Text/treatise	Range of compilation	Field/Domain	Origin of framework
Vastu (Vastoshpati)	Rig Veda	Pre-1000 BCE	Ritual hymns, cosmology etc.	Vedic ritual hymns for the householder
Norms for site selection, site shape, soil tests	Srauta Sutras; Grihya Sutras; Dharma Sutras	800 BCE – 300 BCE	Post-Vedic domestic rituals	Omens and divinatory portions from books of post-Vedic rituals
Norms for omens, rituals etc. before and during building	Srauta Sutras; Grihya Sutras; Dharma Sutras	800 BCE – 300 BCE	Post-Vedic domestic rituals	Omens and divinatory portions from books of post-Vedic rituals
Laghu-guru framework	Pingala-chandahsutra	600 BCE – 200 BCE	Sanskrit prosody	study of poetic metres and verse in Sanskrit, especially the Vedas
Shalya(s) in the site and effects	Sushruta Samhita	600 BCE – 400 CE	Traditional medicine and surgery	Shalya-tantra is surgery as per Ayurvedic norms, Shalya refers to embedded foreign particles
Marmas and Siras of Vastupurusa	Sushruta Samhita	600 BCE – 400 CE	Traditional medicine and surgery	Esoteric vital energy centres in the human body; veins which connect
Fort planning, street layouts etc.	Arthaśāstra; Milinda-panha; Harivamsa Purana	300 BCE – 300 CE	Administration and statecraft	Description-based norms for laying out cities in a sequence of activities
Folk planning	Arthaśāstra	300 BCE – 300 CE	Administration and statecraft	Prescriptions for allocating zones in a city to communities of specific occupations
Classification of settlements	Arthaśāstra	300 BCE – 300 CE	Administration and statecraft	Population, occupation and strategy based classification of settlements for taxes, armies etc.
Vāstupuruṣa	Pauṣkara Samhita	300 CE – 450 CE	Pāñcarātra sect's religious canon	Conception of site as sacred divinity who aids in the success of the mandala ritual
Vāstumāṇḍala	Pauṣkara Samhita	300 CE – 450 CE	Pāñcarātra sect's religious canon	Nyasa-based diagrammatic aid to meditation on Vishnu for Pāñcarātra
Vastusastra for settlement planning	Pratiṣṭhāntara texts	450 - 1000 CE	Mantramārga Śaivism sect's canon	Elaboration of the sect's doctrines and rituals for the installation of idols/icons and later, temples

### 3.2.3.1.1. Vāstu

The concept of a building site known as ‘Vāstu’ begins in the Rigvedic verses, with the divine position of ‘Vāstoṣpati’ attributed to the protector of the homestead. Religious norms for architecture are not yet codified in literature, and rituals deal with the structural elements of a building in symbolic mysticism but do not prescribe for their construction.

This definition of Vāstu seems to hold until up to the time of the Arthaśāstra, where the site (vāstu) is taxed separately from the buildings and gardens upon it (setu); with the role of a diviner-geomancer (vāstuka) being limited to the selection of a fortuitous site.

The conflation of vāstu (site) and Vāstuvidyā (norms for sites and buildings) could have occurred in the period after 500 CE, since the Buddhist texts before this period continue to define the ‘vātthuvijjāchāriya’ as a diviner-geomancer. The c. 550 CE text Brihat Samhita understands Vāstuvidyā as the science of house-building demonstrating the conflation of site and structure in the post-500 CE period. The Śaivasiddhāntika Pratiṣṭhāntara literature (composed between 450 CE and 900 CE) defines the vāstu as the site of the ritual domain inhabited by the Vāstupuruṣa and the deities of the Vāstumaṇḍala; but considers both the site as well as the grid/layout of deities to be vāstu.

Texts composed in the post-1000 CE period conflate it further by considering Vāstuśāstra as the science of architecture and the allied arts, which includes śilpāśāstra, settlement planning and the associated rituals within the same term. Today (post-2000 CE period) vāstu refers to all Indian esoteric norms for the built environment, irrespective of the area of application (interiors, architecture, planning etc.) and the source of the prescription (Feng Shui, Gṛhyasūtras, Vāstuśāstra etc.).

### 3.2.3.1.2. Norms - site selection, soil tests

The norms for site selection and soil selection are defined first in the various pre-200 BCE Gṛhyasūtras; wherein the first literary mentions of preferences for northeast placement of water sources, southwest elevation of land, northeast declination of site etc. occurs. The texts were initially normative for the followers of particular Vedic schools, but later became secularly applicable. These are some of the longest-serving norms of Vāstuśāstra and continue to find mentions in the post-500 CE texts (Purāṇas, Brihat Samhitā etc.), the post-1000 CE texts (Samarāṅgaṇa Sūtradhāra, Mānasāra etc.) as well as the post-2000 CE texts (popular handbooks and reviews of Vāstuśāstra). The reasoning behind the norms are not explained in the source texts, but find some parallels in the practice followed in pre-2000 BCE Egypt and Mesopotamia. Some of the methods (soil compaction tests, soil moisture content tests etc.) find some parallels in the post-25BCE Roman manual De Architectura as well.

### 3.2.3.1.3. Omens and signs for sites, patrons etc.

The rule-based prescriptions of observations for omens and signs for divining the fortunes associated with a particular site, construction or dwelling is first found in the post-Vedic Kalpasūtra corpus, with parallels being found in the Mesopotamian Mul-Apin tablet series (dating to around 700 BCE); where if-then formulations determine the fortunes of particular events, omens and site conditions. The non-Vedic origins of many of the norms of the Kalpasūtra corpus is inferred, yet, subsequent literature and praxis expands upon these norms and observances further; leading to such practices being discouraged within the atheistic-rationalist doctrines of early Buddhism and early Jainism. The post-500 CE texts (such as the Matsya Purana, the Brihat Samhita etc.) display further development and codification of these divinatory and omen-based practices within esoteric lore and literature. The codified norms and divinations attain canonical status within the Vastusastra tradition by about 1000 CE, with many esoteric and religious frameworks (such as the Vāstupuruṣamaṇḍala and the Āyādishadvarga) being retained in subsequent texts and traditions without technical rigour or context due to the Indian epistemological tradition of canonizing older technical literature, especially if they prescribe on religious or ritual doctrines and practices. The gradual association of these divinatory prescriptions with astrology occurs by the time of the late Kalpasutra texts itself (around 300 BCE), yet, complete integration of the domain within astrology and divination is displayed by the time of the Brihat Samhita (around 550 CE).

### 3.2.3.1.4. Laying out a city

The Milindapanha and the Harivaṃśa Purāṇa are two texts from around 200 CE that describe the laying out of a city in a manner that suggests that the reader would be familiar with the process and its purposes. The exact sequence of activities followed is similar to the description in the slightly earlier Roman technical manual on architecture and allied subjects – the De Architectura (c. 27 BCE – 14 CE), whose influence upon the territory of the Greco-Bactrian king Menander (Milinda) is more plausible to establish than that of the comparatively farther coastal region surrounding ancient Dvaraka city (which is laid out by Krishna by similar processes in the Harivaṃśa Purāṇa). The technicality of Vitruvius’s prescriptions is matched only by the Arthaśāstra, whose wide ranging period of compilation (300 BCE – 300 CE) admits possibilities for later interpolations. The diviner is present only in the Arthaśāstra’s prescriptions, and there too only for locating the site of the king’s war camp; yet, the text prescribes locating temples for the Vāstu devata (Gods of the lands/sites) within the fort at the corners, indicating the possibly religious anchoring of divinatory practices. The possibility of the Arthaśāstra’s



urban planning sequence being influenced by Indo-Greek practices of city planning (as evidenced at the ancient city of Taxila) attains significance when the legends of the education of the author of the Arthaśāstra (Kautilya) at the institutes of Taxila are examined. Thus, the earliest technical descriptions of city planning in literature are noticed to have relations to building practices beyond traditional Indian borders.

Yet, this anomaly in literature is contrasted by the early familiarity evinced by the builders of the Second Wave of Urbanisation in India through the cyclopean (stone) city walls at Rajgir and the massive brick ramparts at Kaushambi in the Early Historic period (before 600 BCE). The excavated plan of the fortified settlement of Sisupalgarh is noticed to be the earliest probable application of the prescriptions of the Arthaśāstra, yet the walls of the settlement is dated to around 450 BCE; thus predating the text by more than a century. The possibility being explored here is that the Indian technical literary traditions on city planning may have been influenced by literary practices of the Greco-Romans, yet they may not be adequate representatives for the contemporaneous knowledge of indigenous Indian settlement planning. The earliest dedicatedly architectural discussions on settlement planning occur only in post-1000 CE Vastusastra texts.

The later compositions in the Vastu corpus continue to inadequately overlap (in both time and contents) with the archaeological evidences for architectural advances made by Indian builders. Thus, the Periyapurānam (a c. 1200 CE South Indian Saiva devotional composition) mentions the planning of the city of Madurai according to the books of 'Maya' and yet is understood to be closer in time and space to the birth of the literary genre of Vastusastra than to the birth of the historical indigenous planning traditions. The Manasara and the Mayamata offer syncretic sequences for the laying out of settlements wherein the sequences described in the Arthaśāstra / De Architectura are combined with astrological and divinatory norms.

The technical literature on Indian Early Historic and Early Medieval architecture and planning is often inadequate to suitably explain the planning and building traditions of historic Indian urbanism.

### 3.2.3.1.5. Folk planning

The precursors for the allocation of specific residential quarters in the fortified capital city to specific castes, classes and vocational groups of people is first found in the Arthaśāstra; where it is the streets and not the vāstupadavinnyāsa which determines the size and location of the neighbourhood blocks unlike the later Silpa Sāstrās. The key development in the association of the vāstupurusamandala with the process of settlement planning is achieved by the post-500 CE Pratiṣṭhāntara texts, which is developed upon

by the later Vāstuśāstra texts (post-1000 CE) into frameworks for folk-planning. This explains the key difference between the earlier texts such as the Agnipurāna, Shukranitisārā, the Arthaśāstra etc. which do not allude to the Vāstupuruṣamandala for the orientation and placement of functions within cities (Dutt B. B., 1925). Thus, Shukrāchāryā in the eponymous Shukranitisārā places Council Houses (*Sabhās*) at the centre of the city, within which the royal palace is placed (Dutt B. B., 1925, p. 152); while wealth and birth are considered to be the key factors in the distribution of sites for dwellings of the citizens around about the royal palace (Dutt B. B., 1925, p. 153). Even the famed planner Patrick Geddes has observed the relegation of the "lower and poorer castes" to the south and east of the walled temple city of Srirangam (Dutt B. B., 1925). Thus, the relegation of heretics (followers of minority religions / atheists), outcastes (Chandālas), foreigners (Mlecchas) to be accommodated outside the city walls as per the Agnipurāna, Shukranitisārā, the Arthaśāstra etc. is free of stipulations based on Mandalas due to the development of mandala-based folk-planning occurring later (post-500 CE) in technical literary traditions. Thus, the planning of folk in the city/town were understood to be motivated by contemporaneous socio-religious concerns more than the specific requirements of building traditions or spatial planning concepts.

### 3.2.3.1.6. Vāstupuruṣa and Vāstupuruṣamandala

The Vāstupuruṣa is understood to be the personification of the site as a worshipful entity for ensuring the success of the Pancaratra mandala ritual as per the post-300 CE Pancaratra agama Pauskara Samhita. The attribution of particular directions to this personified entity within a mandala and the positioning of deities upon this entity is a development encountered in later texts such as the post-500 CE Matsya Purāna, Brihat Samhita etc. Meister's site studies of various North Indian temples built across the centuries demonstrate a lack of correspondence between the Vāstupuruṣamandala and the constructed temples (Meister M. W., 1963). The later Vāstuśāstra texts demonstrate an elaborate application of different mandalas as compared to the Pāñcarātra mandala prototypes found in the Pauskara Samhita (which interestingly lack the Vāstupuruṣa concept but do allot specific deities to specific parts of the mandala diagram) which were used only for religious initiation.

### 3.2.3.1.7. Marma, Nadi, Siras, Rajju, Shalya

The concepts of the human body's vital points (Marmasthāna), and channels such as the Nadi, Siras, Rajju etc. are to be found first in the Ayurvedic compilations such as the Sushruta Samhita (600 BCE – 600 CE), the Charaka Samhita (300 BCE – 300 CE) etc. (Yano, 2005). The adaptation of these concepts from the Puruṣa of the human body

to the Vāstupuruṣa of the site's body is noticed first in the post-500 CE texts such as the Matsya Purāṇa, Brihat Samhita etc. The Shalya-tantra (surgery to remove embedded particles) of Ayurveda is also adapted into the divinatory frameworks of Vāstuśāstra as the Shalya of the body of the Vāstupuruṣa. The later Tantras elaborate the concepts further leading to detailed geometric divinatory diagrams and procedures for the determination and extrication of Shalyas from the body of the Vāstupuruṣa to avoid malefic effects. The avoidance of construction at specific geometrically determined points of the site (Marmasthala) is also adapted from Ayurveda into the Vāstupuruṣamaṇḍala frameworks.

### 3.2.3.1.8. Vāstuśāstra for settlement planning

The use of Vāstuśāstra frameworks in the planning of settlements is not found in literature until the 450CE-900 CE era Pratiṣṭhāntara texts, which prescribe the location of specific components of cities, towns, hamlets etc. as per the padas of the Vāstupuruṣamaṇḍala, thus initiating the true application of the theory of Vāstuśāstra to the development of settlement plans. The later South Indian Vāstuśāstra texts developed this concept further to arrive at the various templates for planning settlements, many of which derived their rationale for folk-planning norms from a combination of the methodology of the Arthaśāstra and the interpretative internal logic of the Vāstupuruṣamaṇḍala. The earlier texts (pre-1000 CE) of the Vāstu literary tradition do not employ the Vāstupuruṣamaṇḍala as an organizing framework for the components of a settlement, and many of the earlier texts (such as the Matsya Purāṇa, the Brihat Samhita etc.) do not prescribe for settlement planning either, but only detail the norms for components of the urban built environment (such as houses, palaces, etc.).

### 3.2.3.1.9. Templates for settlements

The templates for settlements are found only in the post-1000 CE Vāstuśāstra texts, wherein the street layout, locations of tanks, locations of temples, shape of settlement etc. is prescribed for each template of settlement in these texts along with descriptions of the ideal demographics, the nature of the economy etc. of such a type of settlement. Interpretative diagrams for these prescribed templates were provided by Ram Raz, P K Acharya etc. in their seminal works, the illustrations of which could have inspired investigations to find the applications of these templates among historic Indian settlements. Yet, the possibility that these texts did not contain implementable prescriptions, but a combination of the descriptions of existing towns and the idealized adaptation of contemporary iconographic components, is possibly worth considering.

### 3.2.3.1.10. Foundation deposits etc.

The practice of installing foundation deposits (consisting of precious and/or symbolic objects) in or around early Historic Indian Buddhist stupas has been archaeologically recorded from as early as the first century BCE (Willis, Buddhist Reliquaries from Ancient India, 2000, p. 80), with the practice being found as far south as Sri Lankan Buddhist architecture (Bodhinayake, 1979) (Colas, 2010, p. 326). The Baudhāyanagṛhyapariśiṣṭasūtra and the Vaikhānasasmārtasūtra could be the earliest non-Buddhist post-Vedic texts that prescribe the deposit of precious objects at the pedestal of religious image (Colas, On the Baudhāyanagṛhyapariśiṣṭasūtra and the Vaiṣṇavāgama, 1994). The prescriptions of the Sri Lankan Buddhist Sanskrit text Mañjuśrībhāitavāstuvidyāśāstra on the subject of Vāstuśāstra demonstrates many parallels to the prescriptions of the Mānasāra, Mayamata etc. (Colas, Pratiṣṭhā : Ritual, Reproduction and Accretion, 2010, p. 325). The Aṣṭamaṅgala icons to be deposited in the foundation rites of buildings as per the Mayamata (Dagens, Mayamata: An Indian Treatise on Housing Architecture and Iconography, 2007) are similar to the Aṣṭamaṅgala set of icons of Svetāmbara Jainism and Theravada Buddhism, both of which were known to be fairly established in the pre-800 CE Tamil Nadu region (Ghose R. , 1998).

### 3.2.3.1.11. Orientation and the gnomon

The process for the setting up of the gnomon to determine the 4 cardinal directions before the laying out of the site for the settlement has been described at length and in technical detail in Vitruvius' De Architectura (Morgan (trans.) & Vitruvius, 1914). Yano traces the claimed development of the methods of orientation found in the Mānasāra, Mayamata and the Īśānaśivagurudevapaddhati across the ages by analysing the prescriptions of similar methods and the shadow tables found in the Arthaśāstra (300BCE – 300 CE) to the Greek shadow tables (as found in later derivative Coptic, Ethiopian, Arabic, Syrian, Armenian, and Latin literature) to their possible origin in the Babylonian 'mul apin' series of shadow tables which were compiled at about 700 BCE (Yano, Knowledge Of Astronomy In Sanskrit Texts Of Architecture (Orientation Methods In The "Īśānaśivagurudevapaddhati"), 1986). Thus, the transfer of knowledge of this particular domain and its methods from multiple pre-existing sources is a possibility which renders improbable the argument for an exclusively indigenous source for these prescriptions as found primarily in the post-1000 CE Vāstuśāstra texts and some of its precursors.

### 3.2.3.2. Prescriptive vs. Descriptive Origins

Salvini commenting on the Samaranganasutradhara observes that it contains ‘repetitive but incomplete’ instructions for scholars or builders intending to use the text as a manual for building (Salvini, 2012). Salvini further notes that the text requires both continuous exposure to contemporary building techniques, local material cultures and continuous cross-referencing in order to be applicable during building construction; which even the text (31.87) acknowledges as follows (Salvini, 2012):

“... [C]onnection to a traditional lineage, skill, direct instructions, Practice of the shastra, exertion in the activities of Vastu, and intelligence...”

Archaeological and historical data is presented to demonstrate the use of architectural and planning principles associated with Vāstuśāstra at the fortified settlement of Sisupalgarh, the fortifications of Kausambi and Rajagriha etc. at least some centuries before the appearance of the first reliably datable text associated with the planning of settlements (the Arthaśāstra - dated between 300 BCE and 300 CE - which also mentions Vāstuvidyā but only as a means of geomantic divination, not as an architectural discipline). The real-world praxis based norms of the seminal texts Brihat Samhitā and Arthaśāstra is taken to show their actual epistemology as being descriptive rather than prescriptive despite their references to canonical Hindu literature and traditional preceptors/gurus.

The absence of detailed settlement planning prescriptions in early Vāstuvidyā literature (before 1000 CE) is contrasted with the early appearance of such norms (independent of Vāstuśāstra frameworks) in the statecraft manual Arthaśāstra (~300 BCE to 300 CE). The earliest extant prescriptions for settlement planning based explicitly on Vāstuśāstra frameworks alone are demonstrated to have origins in the Śaivasiddhāntika Pratiṣṭhānta corpus (dated between 450 CE and 900CE). The template-plans for settlements as prescribed in the mature Vāstuśāstra texts such as the Mayamata and Mānasāra are shown to have correspondences with the āṣṭamangala icons found on Jaina votive tablets (dated to around 300 CE) which depicted cosmological and terrestrial models of the world. The establishment of the Golaki-matha monastery of the Śaivasiddhāntika tradition (the sect which produced the Pratiṣṭhānta texts which could serve as the ontological, chronological and theological precedents for later Vāstuśāstra texts) during the post-1200 CE era in the apparently planned temple-town of Thiruvārur (which was an important centre for Jainism) is drawn attention to. This data is compared to the observation that the template-plans for designing settlements are found initially in Vāstuśāstra literature of South Indian origins. Research on the urban character of

medieval temple towns of Tamil Nadu (300 CE to 1000 CE) and their conceptual similarities to some prescriptions in the mature Vāstuśāstra texts of South India is commented upon.

Some researchers consider that the treatises initially provided indications which supplemented the sthapati's knowledge and allowed him to explore new inspirations and ideas, while always remaining within the context of accepted building traditions (Dallaporta & Marcato, Some Considerations on Organisation of Territory in Ancient India (seventh century BC - twelfth century AD) (Based on the Sample Area between Farrukhabad and Shah Alampur, U.P.), 2010). The rigorous adoption and practice of the norms as detailed in the technical treatises were always tempered with clauses allowing for the “sense of the architect” to make the right contextual decisions as merited by the site and its context, regardless of the textual rules (Dallaporta & Marcato, Some Considerations on Organisation of Territory in Ancient India (seventh century BC - twelfth century AD) (Based on the Sample Area between Farrukhabad and Shah Alampur, U.P.), 2010). Yet, some norms became standards which were seen as benchmarks for corroboration of the design process itself, with the ritualised standards for building traditions; leading to technical decisions being slowly fossilised into ritual-symbolic tropes (Dallaporta & Marcato, Some Considerations on Organisation of Territory in Ancient India (seventh century BC - twelfth century AD) (Based on the Sample Area between Farrukhabad and Shah Alampur, U.P.), 2010, p. 47).

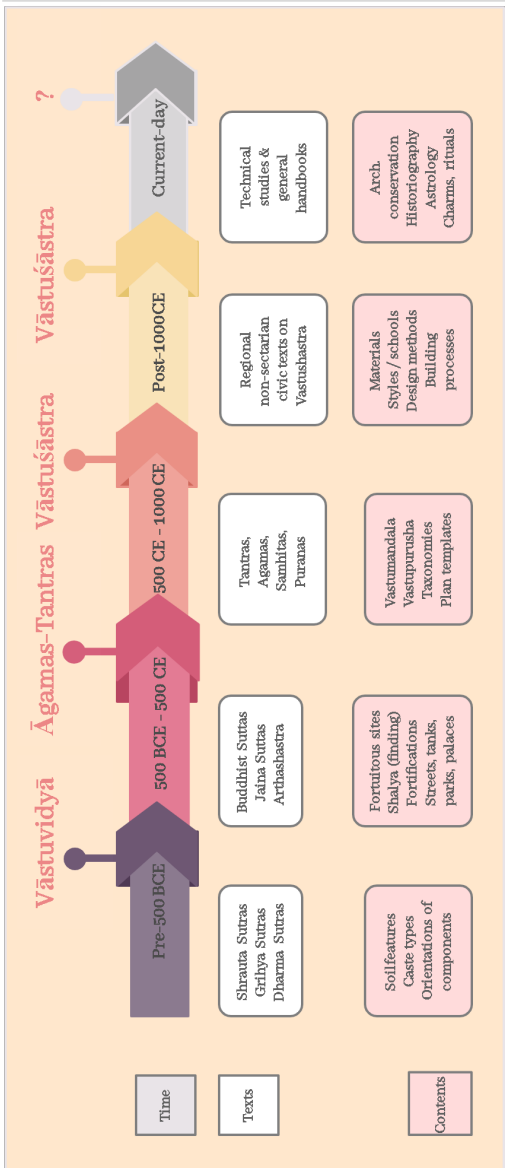


Figure 3-10: Proposed timeline for the ontological development of vastu traditions

### 3.2.4. Historicising the development of literature

#### 3.2.4.1. Pre-500 BCE period

The earliest comments upon the practices and paradigms associated with Vastuśāstra in this period belong to the prescriptions as detailed in the Hindu post-Vedic ritualistic text corpus of the Kalpasūtras (Śrautasūtras, Gṛhyasūtras, Dharmasūtras etc.). The norms are primarily divinatory, with a strong emphasis on the hierarchy of castes, but with unclear links to the preceding Vedic literature. The norms in these texts appear to be based on contemporary praxis and customs, thus possibly pointing to the origin of the earliest norms on vastu traditions in early historic India occurring within a post-Vedic Hindu socio-ritualistic framework, from the Kalpasūtra corpus onwards. The texts do not demonstrate awareness of urban life or city-building distinctly, and some later-dated texts mention towns only to state them as being unfit for the residence of students and scholars.

These texts however do not display contemporaneous knowledge of the Early Historic cities known to have been established in the same period in the Gangetic plains. Some outliers, such as the planned settlements of Taxila, Sisupalgarh etc. (which are comparatively dispersed geographically) are not represented/acknowledged in the texts and their traditions. The material evidence left behind at the fortified settlements of Kaushambi indicate the awareness of planning and implementing city-level fortifications with comparatively advanced materials and construction processes, at dates estimated to be much prior to the compilation of these texts. Thus, the contemporaneous literature indicates the origins of the paradigms of early Vastuvidyā but not the awareness of contemporaneous settlement planning processes.

#### 3.2.4.2. 500 BCE – 500 CE period

The thesis that the domain of early Vastuvidyā (from 500 BCE to 500 CE) was based primarily on geomancy and divination is supported by the Buddhist and Jaina canon. The references in literature to this domain remains remarkably consistent across texts as varied as the Arthaśāstra, the Sumangalavilasini, the Brihat Samhita etc. wherein it is referred to as ‘Vastuvidyā’ and distinctly connected to the determination of the suitability of the site for construction and in some cases, the consecration of the site through the appropriate rituals. The earliest Jātakas, which can be dated to this period, also support the characterization of early Vastuvidyā as an esoteric art or practice which was distinct from that of architecture and planning. The Arthaśāstra, in one instance, distinctly demarcates the roles of a vāstuka, an astrologer and a carpenter in the initial construction of a camp. The earliest extant temples (mostly dating to the Gupta period) belong to the latter half of this phase and demonstrate the architectural responses to the

rising trends of idolatry and iconolatry across northern India. The sectarian associations of Vāstuvīdyā have not seemed to have occurred yet, with both civic and royal clients requesting the services of the diviner, in some instances of literature. The familiarity with the processes and steps involved in the laying out of a city seems to be localized to the Northwest of India, as understood by the occurrence of the descriptions of city-planning found in two texts – the Buddhist text named Milinda-Panha associated with the Greco-Bactrian king Menander and his Northwestern kingdom based in Sagala city (modern-day Sialkot in Pakistan), and the Vaiṣṇava text named Harivaṃśa Purāṇa associated with the Northwestern coastal city of Dvārakā (modern-day Gujarat). The possibility of the Arthaśāstra also deriving its detailed prescriptions for city-planning from such Northwestern sources (such as the contemporaneous manual De architectura by the Roman architect-engineer Vitruvius compiled c. 25 BCE in the Roman territories) is posited due to the legendary education of the attributed author Kautilya at the Northwestern Indian university city of Taxila, as well as the extensive cultural, diplomatic and artistic links known to have been maintained by the Maurya kingdom with the Indo-Greek kingdoms, the Greco-Bactrian kingdoms and the other Greek-associated kingdoms further northwest of the Mauryan empire. The possibility of the text deriving its prescriptions from observations and subsequent descriptions of the contemporary Indian fortified cities as they were being built, cannot be discounted; since, materially, the text postdates the excavated remains of these early cities.

### 3.2.4.3. 500 CE – 1000 CE period

The development of the domain of Vāstusāstra from the domain of Vāstuvīdyā (the formation of a canonical scholarly discipline of ‘Śāstra’ as contrasted to skilled but non-canonical ‘Vidyā’) is demonstrated to have occurred over a period (around 500 CE to 1000 CE) of gradual accretion and development (through the adaptation of ontological concepts for spatial thinking from non-architectural sub-altern Hindu literature (such as the contemporaneous sectarian Agamas and Tantras which prescribed norms for iconography and architecture)). The contemporary real-world praxis based norms of the Brihat Samhitā can be understood to show the gradually changing ontological approach to the canonization of applied knowledge (especially of the domains of iconometry and architecture) through descriptive norms based on the observation of practiced paradigms rather than prescriptive norms based on the frameworks found in older canonical Hindu literature. This change in ontology though does not yet manage to change the epistemological basis of the texts, which still retains its ahistorical and ahuman character through its references to mythic or divine sources for the validation of their contents,

alongwith the complete absence of discussion on historic built examples in the text contents. The sectarian paradigms for religious architecture as found in the various Pāñcarātra agamas and Śaiva agamas demonstrate the interlinked development of the literary domains of iconometry and architecture with that of the canonization and codification of form-based worship in both Hinduism and Buddhism by priests, monks and other vested literate groups. The texts reflect the contemporary developments in settlement planning of their time and place, such as their prescriptions for the circumambulatory paths around town and the planning of roads and gateways with the temple complex at the centre of the settlement, two features which are prominent in the temple towns of Early Medieval Tamil Nadu (especially in the Kaveri delta region – the rulers of which region nominated the initiatory based form of Saiva Siddhānta as the state cult). Yet, the compilation of contemporary technical knowledge in architecture and planning within religious-ritualistic frameworks, to enable the initiation and consecration of such infrastructure by the priests, is the salient feature of these texts. The texts depend on the planning paradigms discussed in the landmark text Arthaśāstra, the influence of which is evident across various chapters, including those on the classification and laying out of settlements, the types and nature of civic and royal infrastructure, the types and processes of fortification etc.

The Śaiva Pratiṣṭhānttras are the best examples for the literal development of detailed prescriptions based on theological frameworks for all components of the built environment with which the Śaiva Saiddhāntika priests had exposure to in the course of their positions and duties (including idols, temples, palaces and cities). These texts are the earliest known extant texts which discuss settlement planning through the paradigms of Vāstuvīdyā. The Hayaśiṛṣa Pāñcarātra Tantra is another pre-900CE text which demonstrates the evolution of such Vastu-based paradigms for the architecture and rituals of the Pāñcarātra Vaiṣṇava sects, albeit not prescribing for settlement planning in equivalent detail. Some examples of congruence of the settlement layouts of South Indian brāmhadeya villages such as Uttaramerur and the prescriptions found in the Vaiṣṇava agama text known as Marichi Samhita are also a point of interest here.

### 3.2.4.4. Post-1000 CE period

The subsequent period (post-1000 CE) is understood to have witnessed the rise of various Vāstusāstra texts and self-conscious regional building traditions which mutually influenced practice and theory. The difference between mature ‘Vāstusāstra’ literature and its influential precedents in literature such as the Śaivasiddhāntika Pratiṣṭhānttras,



the Pāñcarātra Agamas etc. are in terms of the distinct characteristics of the text itself apart from the contents that they seek to prescribe or describe.

Some of the salient characteristics of a mature Vāstuśāstra text are:

- a) composition date after 1000 CE
- b) association to specific geographic regions and regional styles of architecture
- c) comparatively non-sectarian prescriptions
- d) attempted Śāstric legitimacy through the pursuit of metrical Sanskrit verse as found in the Purāṇas, the Agamas, the Pratiṣṭhāntras etc.
- e) retention of religio-spatial ritualistic frameworks without rigorous theological/logical justifications
- f) comparatively higher correspondence of textual norms with historic built examples
- g) ascription of authorship to historical people, especially scholars or practitioners.

The catalyst for the start of the literary tradition is posited to be through a seminal scholarly text written especially for the domains of architecture and allied fields, i.e. the first true Vāstuśāstra text and pioneer for this literary tradition is the Samarāṅgaṇa Sūtradhāra which is attributed to the king Bhojadeva (reigned 1010 CE – 1055 CE) of the Paramara dynasty of the Mālavā region in present day Madhya Pradesh. The assertion is made on the basis of the text's correspondence with the proposed characteristics associated with a typical post-1000 CE Vāstuśāstra text. This claim is made despite the non-assertion of the Samarāṅgaṇa Sūtradhāra to being a 'Vāstuśāstra' text (as compared to the constant textual assertions made by the Mayamata). The demonstrable independence of the Samarāṅgaṇa Sūtradhāra from the preceding Pratiṣṭhāntra textual format and contents is asserted by its composition as a neo-purāṇa text with prescriptions for all possible architectural and planning possibilities with practical and technical subject matter; as contrasted with the clear influence of the Pratiṣṭhāntra texts on the Mayamata's approach towards architecture and planning (despite redactions, later compilation dates than the Samarāṅgaṇa Sūtradhāra and newer ontologies).

The rise in this literary tradition after 1000 CE is attributed to the following reasons:

- a) Rise of ritual validation of rule by new and old dynasties,
- b) Rise of urbanism, land development and irrigation supported partly by land-owning temples (especially in early medieval peninsular India),
- c) Rise of idolatry and iconolatry supported by Puranic, Tantric and Pratiṣṭhā literature
- d) Rise of literate and wealthy architect-artisans with some negotiating powers through guilds of trade and occupations.

### 3.3. Conclusions

The most important takeaway from this research is that historicizing traditional Indian architectural literature also humanizes it. This can lead to a better understanding of the context of the texts and their milieu, thus both aiding academic investigations as well as deconstructing popular beliefs. The understanding is obtained that the earliest seminal texts on Vāstuśāstra (such as the Gṛhyasūtras, the Arthaśāstra and the Brihat Samhitā) were texts that depended less on the traditional exegesis of older authoritative literature and contributed descriptive observations of contemporary praxis. This could indicate that Vāstuśāstra was never meant to be set in stone; but was generated within a dynamic process of observation, description, and prescription of contemporary building traditions.

The original research question of the influence of contemporarily recognized Vāstuśāstra texts and traditions on historic Indian settlement planning is thus demonstrated to have been effective only if the settlements were planned after 1000 CE. The review of historic literature and archaeological research demonstrates that the cities and settlements popularly held to have been planned according to Vāstuśāstra such as Madurai, Jaipur etc. have no contemporaneous epigraphic or literary evidence supporting these claims. The research methodology and reviewed literature also demonstrates the invalidity of presenting selective correspondence of built features to textual norms as being reliable indicators of compliance with Vāstuśāstra. The historic settlement of Uttaramerur is shown to have epigraphic evidence for compliance only with Āgamic rules for temple locations and temple architecture, and not for compliance with the later Vāstuśāstra norms for settlement planning.

The conclusions formed are that the theory and praxis of architecture and planning in historic India were related but not demonstrably instructive. The history of the practice of Vāstuvidyā (more than 2000 years Before Present) is shown to be older and fundamentally different as compared to the literary tradition of Vāstuśāstra (about 1000 years BP). The increased correspondence of Vāstuśāstra literature and built evidence from 1000 CE onwards is offered as proof of its recent and descriptive origins through technically competent and historical authorship. The emergence of detailed prescriptions for settlement planning in the mature phase of Vāstuśāstra literature (post-1000 CE) is presented as signs for its later and descriptive origins. The methods of literary historicism and deconstructive meta-analysis is enjoined for future research on the Vāstuśāstra corpus.

### 3.4. Applications

#### 3.4.1. Optimisation of Floorplans

A survey conducted on prospective homebuyers revealed that 80% of respondents preferred homes that were vastu-compliant, with some developers stating in interviews that the numbers could be as high as 90% of all home buyers (Joshi, 2013). The basic requirement from a Vastu-compliant home is the allocation of particular functions to the eight basic directions; though modern compilations and rulebooks describe more complex iterations and norms that derive their reasoning from non-canonical epistemes (such as cosmic rays, sunlight, unimpeded flow of energy etc.); none of which are attributed in the reviewed sources as being the cause for the effects/results experienced by a patron/builder (Otter, 2016). The plan typically referred to as a Vastu-compliant plan is provided below.

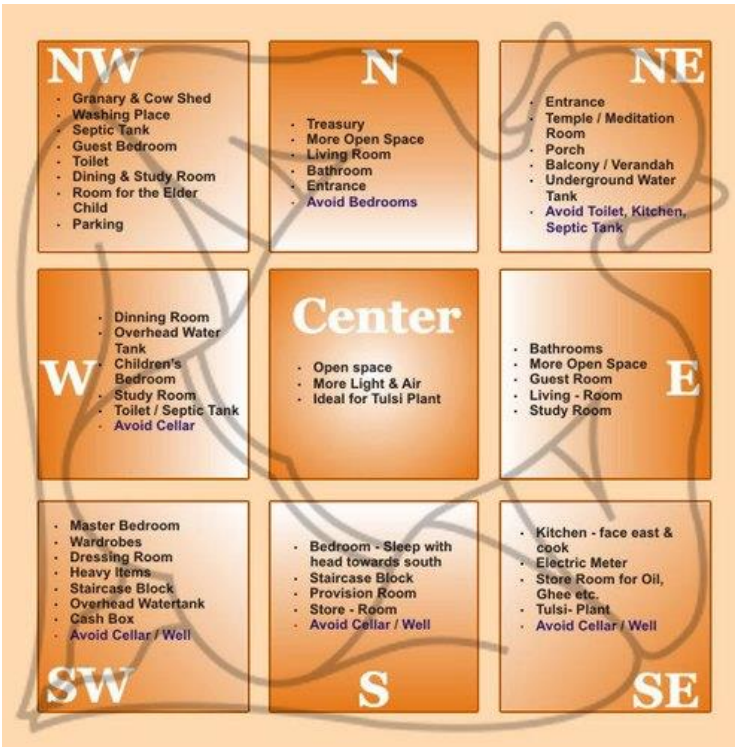


Figure 3-11: Vastu-compliant floorplan zoning diagram  
Source: Archplanest, 2017

This particular arrangement of spaces/functions is found in a similar prescription in the Pratiṣṭhāntara corpus of the texts of the Śaiva Saiddhāntika sect (Mills, 2020). The *Nandyāvarta* type of house, as described in the *Mayasamgraha*/*Mayamata*, the *Bṛhatkālotara*, the *Kiraṇa*(āgama) etc. is to be zoned in a manner similar to the modern-day Vastu-compliant typical floorplan. Most of these texts are stated to have been compiled in a form similar to their extant manuscripts by the 10<sup>th</sup>-11<sup>th</sup> century CE at least. (Mills, 2020).

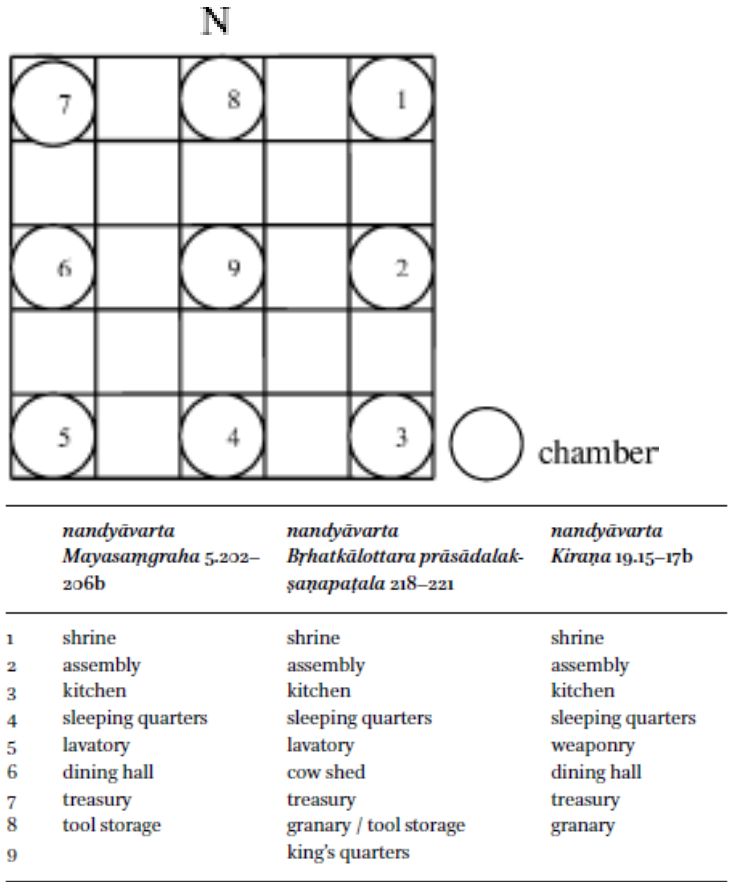


Figure 3-12: The *nandyāvarta*/*nandikāvarta* set of nine chambers for a residence as described in the *Saiva Saiddhantika Pratiṣṭhāntara* texts  
Source: Mills, 2020

These prescriptions may have been gradually developed and propagated across the centuries by the myriad Vāstuśāstra texts until they attained canonical status as the only beneficial arrangement of spaces for a residence. This development may not be malignant in and of itself, but the results of this ossification of prescription has resulted in sub-optimal spatial planning of dwelling units in India, especially for high-volume high-consistency building types, such as apartments.

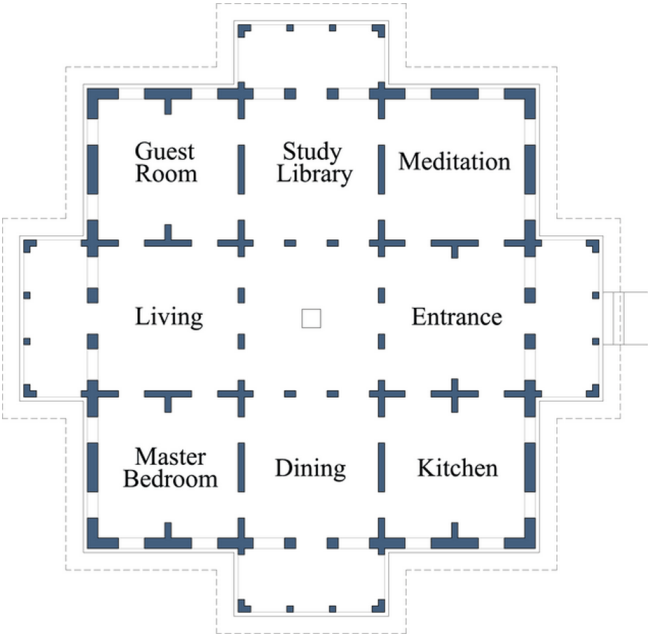


Figure 3-13: Ideal placement of rooms in a home as per Maharishi Vastu Architecture  
Source: Kohli, 2021 after Maharishivastu.org, n.d.

This argument can be illustrated by comparing the typical floorplans of two apartment blocks of 3BHK configured flats (dwelling units with 3 bedrooms, a hall and a kitchen), in the two neighbouring countries of India and Bangladesh. Bangladesh is chosen as the comparison here since the available building materials, value of land/built-up area, construction methods etc. are close enough to the Indian situations to merit a comparison of equals; with the important distinction that Bangladesh (being a Muslim-majority country and thus generally not a subscriber of Hindu beliefs and customs) does not have a dominant preference for Vāstu-compliant architecture (as understood and practiced in India).



Figure 3-14: Example for a “Vastu-compliant” floorplan - typical floor for an apartment building in Hyderabad, India  
Source: Accurate Windchimes by Accurate Developers, 2021



*Figure 3-15: Example for a “vāstu-non compliant” floorplan - typical floor for an apartment building in Dhaka, Bangladesh  
Source: Imagine Eastwood by Imagine Properties, 2017*

The floorplan of the apartment in Hyderabad (India) demonstrates the uniform location and orientation of internal components such as the kitchen (SE), the master bedroom (SW), the puja room (NE) etc. regardless of the apartment unit’s location w.r.t. the internal corridor and its neighbouring units. This constraint is not noticeable in the apartment in Dhaka. The need for compliance of the dwelling units in Hyderabad to this atypically uniform configuration of spaces can be traced to the arrangement of spaces inside a residence as prescribed in the early vāstu texts such as the pre-900 CE Śaiva Pratiṣṭhāntara text Mayasamgraha which was discussed earlier.

This information may be considered as a quirk of only those clients who are firm believers of Vāstuśāstra, until it is considered that about 80-90% of buyers in India require the units to be as vāstu-compliant as possible (Joshi, 2013), regardless of their personal faith ( this sometimes also occurs due to fears that non-compliance with vāstu norms could affect future resale valuations, which only serves to reinforce the general validation of the efficacy of the spatial prescriptions of Vāstuśāstra).

The examples above demonstrate the following two axioms of contemporary Indian architecture:

1. The zoning and orientation of the generic components of a residence (whenever subject to the prescriptions of Vāstuśāstra) are the only conditions to be considered for the condition of vāstu-compliance
2. Only certain specific locations and directions are beneficial for locating specific spatial components of residential dwelling units (regardless of site context and building type)

The historicised study of Vāstuśāstra would allow for placing these unchallenged axioms under contextual and historical analysis. These analyses will demonstrate the intrinsic rationales that support these axioms; which can be examined on their own merit by builders and dwellers. These analyses would allow for assessments to become independent of ahistorical conflations and justifications such as the sustainable building principles embedded in Vāstuśāstra norms, the effect of geomagnetic orientations on resident stress levels etc. (the use of such principles not being attributed to in the extant pre-1000 CE Vāstuśāstra texts).

### 3.4.2. Investigation of Causation

Consultations with Vāstu experts and building professionals in India often introduces difficulties in the decision-making process due to the difference in the design and construction approach of Western-trained built environment professionals and the Indian cultural framework for spatial norms. Differences in alignment during such discussions can be resolved by determining the causative agent responsible for the benefic or malefic effect predicted for the design under discussion. Attribution of causative agency to any other factor than the divined luckiness of a site (such as a particular planet’s influence – astrology (pre-500 BCE); the horoscope of the owner – āyādi formulae (post-500 CE); the shape of the site – Gr̥hyasūtras, colour of the room – Feng Shui etc.) would thus be understood as derived from a particular textual tradition. This could allow all participants to understand the rationale of that causative agent in a more complete manner. This process applied to historic architecture and planning could also help establish the date for the particular specimen (due to the time periods established for the rise of certain causative agents in Indian Vāstuśāstra literature).

### 3.4.3. Historicism and Metacriticism of Historical Indian Building Traditions

The ahistorical attribution of Sanskrit texts and historical architectural heritage to the Vedic era can be tempered by a rigorously academic approach to chronology and ownership, by the adoption of historicism and metacriticism during the analysis of such sources. The fields of Indian architectural conservation, historic Indian architectural



literature as well as Indian architectural history would then be served by informed, technical and historical reviews which would help these domains attain both academic rigour as well historical standing. This process might also reduce the obfuscation of historical Indian architecture and planning through ritualistic and religious lenses, and contribute to humanized studies of historic Indian architecture and planning.

### **3.4.4. Sociological Frameworks for Centralised Settlement Planning**

#### **3.4.4.1. Childe's Urban Revolution**

The framework proposed by Grodon Childe was the first sociological model in contemporary literature to distinguish the factors that separated the earliest cities of any culture from their rural environs distinctly. The impact of this framework has lasted more than a century and continues to influence studies on urbanism of both ancient and contemporary cities (Smith M. E., 2009). The ten traits of the earliest ancient cities in comparison to contemporaneous rural settlements, as described by Childe are (Childe, 1950):

1. More extensive in size and more densely populated
2. Differentiated economy
3. Taxation of surplus production
4. Monumental architecture
5. 'Ruling class' consisting of royalty, clergy, military etc.
6. Systems for record-keeping, writing, numeracy etc.
7. Development of predictive sciences (such as geometry, astronomy etc.)
8. Sophistication of art
9. Long distance trade with foreign entities
10. State organisation based on domicile instead of kinship

Though these traits are recognised to not be perfectly mutually exclusive or comprehensive, they were an important step in the initiation of theoretical frameworks for the recognition of urbanism in ancient cultures across the world.

#### **3.4.4.2. Previous Sociological Frameworks**

Many authors have noticed the importance of social institutions that were required of complex societies for the formation of states to aid in the administration of large areas of land at a centralised physical settlement (Childe, The Urban Revolution, 1950) (Ray A. , Villages, Towns and Secular Buildings in Ancient India, 1964) (Smith M. E., The Earliest Cities, 2002). Smith highlights four key institutions that aid in this formation (Smith M. L., 2016):

1. Writing / Record-keeping / Numeracy
2. Centralised political control
3. Specialised / differentiated economy
4. Class stratification

The importance of these institutions are not a confirmation of urbanisation in the Early Historic period of a society, as is evidenced by the Jomon culture in Japan; who despite having an apparently differentiated economy and methods of record-keeping, did not form city-states.

Weber defines the urban community through the following five attributes: (Fox R. G., 2021):

1. Fortifications
2. Market and trade
3. System of law and courts
4. Municipal corporation of urban citizenry (or its equivalents)
5. Political autonomy of citizenry to choose their leaders

This definition excludes many pre-modern cities across Asia and Europe and may not meaningfully communicate any apparent differences between Occidental and Oriental urbanism. The most widespread dichotomy is that between 'planned' and 'organic cities, which is taken to imply the degree of competing interests other than the State in the production of the public built environment, the praimry mode for which is the implementation of an orthogonal layout consistently across a culture's settlements (Smith M. E., 2009). Smith argues for widening the understanding of 'planned' urban environments from beyond orthogonal layouts and monumental architecture, towards holistic frameworks such as the standardization of urban components or common metrology in the study of ancient urban settlements (Smith M. E., 2007).

#### **3.4.4.3. Proposed Framework of Institutional Factors**

The institutional framework suggested by Smith previously (Smith M. L., 2016) highlights the importance of four institutions that are to aid in the formation of centralized planned urban settlements:

1. Writing / Record-keeping / Numeracy
2. Centralised political control
3. Specialised / differentiated economy
4. Class stratification

The proposed framework of institutional factors builds on these suggestions by asserting the need and presence of the following institutions in a particular culture with



the potential for urbanism before the development of centralized planned cities/towns within their regions:

1. Colonisation
  - a. Settlement of uninhabited lands outside/within the State's territory by partially/fully State-supported settlement programs
  - b. Assimilation of non-urbanised regions within the State's vicinity by the establishment of State-sponsored settlement programs
2. Decentralisation and empowerment of governance
  - a. Self-organised collectives for local governance
  - b. Rise of guilds and councils composed of classes other than royalty and nobility
  - c. Capacity of such guilds, collectives and councils to regulate localized land uses, revenues and contracts
3. Bureaucratic institutions for efficient taxation; mediated by:
  - a. Sophisticated landholding modes
  - b. Sophisticated State-devised Land revenue systems (cash and kind)
  - c. Appointed State officials (as opposed to kith/kin based posts)
4. Recording and Valuation of land and property; mediated by:
  - a. Regular land surveys
  - b. Property transaction records

The historical support for pre-urban cultures possessing these four institutional factors while transitioning into urbanism or while practicing urbanism is numerous, some examples including:

1. Bronze Age Mesopotamian empire (pre-1100 BCE)
2. Post-600 BCE Chinese kingdoms
3. Post-600 BCE Greco-Roman kingdoms
4. Early Medieval Chola empire (300 CE – 1200 CE)

The aforementioned cultures mostly manifested the institutional factors and developed some of the finest examples of planned large urban settlements almost simultaneously. The rise of technical theory to support the emergent frameworks of socio-spatial organization can be seen to have followed the manifestation of these institutions in all these cases. Thus, the birth of planning theory in the wake of colonization and land revenues, is a possibility being posited here.

### 3.5. Scope for Future Research

Some of the threads of future research that could provide useful links to the historical and ontological development of Vastusastra include:

1. Methodological analysis of settlement planning norms as prescribed in the 25 BCE De architecture by Vitruvius and the 300 BCE-300 CE Arthashastra by Kautilya
2. Ontological analysis of the development of the Vastupurushamandala - from its ritualistic origins to its current architectural applications
3. Historical analysis of possible correlations between rise in urban planning practices with rise of efficient centralised land taxation systems and state-sponsored settlement programs
4. Terminological analysis of names, roles and surnames of craftsmen, architects and builders as found in literature, inscriptions, etc. from the Early Historic period to the Late Medieval period in peninsular India
5. Sociological analysis of the effects of Saiva Siddhanta theology on the practice of art and architecture in Early Medieval South India
6. Historical analysis of the development of idolatry and iconolatry in Early Historic India, especially in Buddhist, Jaina and other non-Vedic belief systems
7. Historical analysis of the contribution of Early Historic Buddhist theology and praxis to the development of Early Historic Indian religious architecture
8. Historical analysis of religion and urbanism in Early Historic South India
9. Comprehensive historical review of Vastusastra based on the insights gained from aforementioned research directions

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## 5. Appendix

Table 5-1: Parametric tabular comparison of influential Vāstuśāstra texts

[illegible]